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BEFORE THE STATE OF CALIFORNIA  
THE NATURAL RESOURCES AGENCY  
CALIFORNIA ENERGY COMMISSION (CEC)

In the Matter of: )  
 ) Docket No. 11-IEP-1L  
2011-2012 Investment Plan for the )  
Alternative and Renewable Fuel and )  
Vehicle Technology Program )

Advisory Committee Meeting and Public Workshop on Evaluating the  
Benefits of the Alternative and Renewable Fuel and Vehicle  
Technology Program

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

MONDAY, DECEMBER 19, 2011

Reported by:  
Peter Petty

 **ORIGINAL**

Commissioners (and their advisors) Present:

James D. Boyd, Vice Chair and Presiding Member,  
Transportation Committee  
Tim Olson, His Advisor

Staff Present:

Jim McKinney, Office Manager, Emerging Fuels & Technologies  
Pat Perez, Deputy Director, Fuels & Transportation Division  
Charles Smith  
Peter Ward, Program Manager, AB 118

Advisory Committee Members Present (\*via WebEx)

Shannon Baker-Branstetter, Consumers Union  
Tom Cackette, Chief Deputy, California Air Resources Board  
Tim Carmichael, California Natural Gas Vehicle Coalition  
Lesley Brown Garland, Western Propane Gas Association  
Bonnie Holmes-Gen, American Lung Association, California  
Steve Kaffka, California Biomass Collaborative (Courtesy  
of University of California, Davis)  
Brian McMahon, Executive Director, California Employment  
Training Panel Program  
Jack Michael, Recreational Boaters of California  
John Shears, Center for Energy Efficiency and  
Renewable Technologies (CEERT)  
Jananne Sharpless, Member at Large  
Eileen Tutt, California Electric Transportation Coalition  
Clark Williams, for Member Howard Levenson, California  
Department of Resources and Recovery

Also Present

Public Comment

\*Andrew Jolin  
John Boesel, CALSTART  
Bob Davis, Citizen, Red Bluff  
Terry Gong, Harmon Systems Intl., Earth Renaissance Technologies  
\*Tyson Echerle, Energy Independence Now  
\*Paul Staples

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P R O C E E D I N G S

DECEMBER 19, 2011 9:12 A.M.

MR. MCKINNEY: Good morning, everybody. Thank you very much for coming. This is a public workshop to present the Initial Staff Report on Benefits for the Alternative and Renewable Fuel and Vehicle Technology Program. My name is Jim McKinney. I manage the Emerging Fuels and Technologies Office here at the Commission. We administer ARFVTP. This is a joint public workshop to present the findings of the report and to kick off the Fiscal Year 2012-2013 Investment Plan process.

I'm just going to do a few housekeeping items, go over the agenda, and then will turn it over to Commissioner Boyd for opening remarks. In the event of an emergency or the alarm goes off, please exit out both the doors and we assemble over in the park where it will be bitter cold, so grab your jacket on the way out. Restrooms are back in this corner here, we have the Rendezvous Snack Bar upstairs.

The agenda today is opening remarks by Commissioner Boyd. I will walk us through the staff presentation and we will then open for public comment and discussion beginning with members of the Advisory Committee and then opening to the general public, and

1 this includes people on the WebEx Broadcast, so Advisory  
2 Committee Members first, and then general public.

3 And then later in the morning, Charles Smith  
4 will walk us through the status of the '12-'13  
5 Investment Plan. So with that, Commissioner Boyd.

6 VICE CHAIR BOYD: Thank you, Jim. And thank  
7 you everybody for being here. Attendance of the  
8 Advisory Committee is a little sparse, 1) it's the  
9 holiday season, and 2) I would apologize for us as an  
10 agency being a little behind the power curve in getting  
11 the word out to a lot of people. I'm afraid everybody  
12 here has been scrambling most of this year to keep their  
13 head above water and keep up with all that's going on;  
14 it's been an interesting and tough year. It's been  
15 about two year's worth of work jammed into one year as  
16 far as my body thinks. So thank you all for being here.

17 This is, as billed in the Hearing Notice, a  
18 Joint Workshop and Meeting of the 2011-2012 Advisory  
19 Committee to look at the Benefits Report. And many of  
20 you have asked down through the life of this Advisory  
21 Committee, that, you know, you just pointed out, the  
22 need to begin to look at some benefits in order to  
23 provide guidance for the future. And we certainly  
24 second that thought and are grateful to have this first  
25 draft benefits report to look at MTUs and, to me, this

1 is 1) important for right now because it is, as I just  
2 said, something that will help us understand if we have  
3 much of a reading, you know, the pulse of where we've  
4 been so far and what the benefits, or perhaps  
5 disbenefits [sic] that have been, in order to guide us  
6 in the future and help us create the next Investment  
7 Plan. And as far as I'm concerned, but this isn't an  
8 official proclamation, but the 2011-2012 will more or  
9 less be the 2012-2013 Advisory Committee and we're not  
10 going to -- at least this Commissioner has strongly  
11 recommended -- that we not go through the typical past  
12 "thank you for your services, everybody, re-solicit  
13 everybody, and get most everybody back anyway process."  
14 We will -- there's a few people who have moved on,  
15 changed jobs, and we will be thanking them for their  
16 service in '11-'12, and we will be looking for a few  
17 additions to consummate, to round out a 2012-2013  
18 Advisory Committee. And there's a host of reasons for  
19 doing that, 1) we like you all, 2) we all understand  
20 each other, we've all educated each other on the issues,  
21 and I could stop there and say that's enough, but there  
22 is also, in addition, the fact that, due to the interest  
23 of the Legislature in this program, we have to turn in a  
24 Draft Investment Plan for the year 2012-2013 next month.  
25 So while this is billed as a review of the Benefits

1 Report today -- and it is -- I think you all, in  
2 particular, need to keep in mind that this document is  
3 potentially useful to help formulate the next Investment  
4 Plan and by learning the benefits, you know, progress  
5 against plan, how have we done, what should we do  
6 different, what different avenues might the plan take in  
7 the future. And I have been encouraging the staff and  
8 want to encourage the Advisory Committee to think about  
9 -- to not fear the idea of making a radical turn onto a  
10 different pathway in any one of the areas if it is seen  
11 that, a) things aren't working out too well in one area,  
12 or b) -- and I hope this is the preferred outcome --  
13 that, "Okay, we've done well, we've done good, we've  
14 launched some things here, now we have this unique  
15 opportunity of time and a little bit of money to  
16 stimulate -- to facilitate some other options with  
17 regard to the way to get Alternative Vehicle  
18 Technologies and/or Fuels implemented and provide seed  
19 money to start something else."

20           The one thing I do caution the staff about  
21 constantly, and advise my fellow Commission members, is  
22 that this is not hopefully to be seen by folks out there  
23 as a program that once launched for the seven and a half  
24 year lifetime of the program, we're just going to rubber  
25 stamp everybody who got a start, and they're just going

1 to continue on getting a subsidy out of this program to  
2 the bitter end; it is to launch people, to provide seed  
3 money, and to move on to other things. And I encourage  
4 everybody to think about the successes and then look for  
5 potential future successes.

6           So, again, today's benefit is to look at what  
7 have been the benefits today, how might we, the staff  
8 and we, strengthen this benefits report that other  
9 people will see, or additions or corrections that you  
10 see, as well as use it as a roadmap for how to, in a  
11 very short period of time, formulate the first draft of  
12 an Investment Plan for 2012-2013, and to also think  
13 about any significant changes that we might want to  
14 make. As you recall, the Legislature suggested the  
15 Investment Plan go in about the same time the Governor  
16 turns in his budget; it is not part of the budget, it's  
17 just as I read the requirements, it's just concurrent  
18 more or less with the budget. So that will establish  
19 the timeline.

20           So with that lengthy introduction and the last  
21 one you'll ever hear from me, to one of these meetings,  
22 let's do introductions, at least go around the table and  
23 then hear from the Advisory Committee members who might  
24 be on the phone that they are in attendance. So please,  
25 going to my right, would you folks here at the table



1 introduce yourselves, who you are, and who you represent  
2 for anybody out there in Radio Land listening in.

3 MR. SHEARS: Good morning everyone. This is  
4 John Shears with the Center for Energy Efficiency and  
5 Renewable Technologies.

6 MR. SMITH: This is Charles Smith with the  
7 Emerging Fuels and Technologies Office.

8 MR. PEREZ: Pat Perez, Deputy Director for the  
9 Fuels and Transportation Division.

10 MR. CACKETTE: Tom Cackette, ARB.

11 MR. WILLIAMS: Clark Williams with CalRecycle  
12 on behalf of Howard Levensen.

13 MR. KAFFKA: Steve Kaffka, California  
14 Biological Collaborative in U.C. Davis.

15 MR. MCMAHON: Brian McMahon, California  
16 Employment Training Panel.

17 MR. MICHAEL: Jack Michael, representing  
18 Recreational Boaters of California.

19 MR. CARMICHAEL: Tim Carmichael with the  
20 California Natural Gas Vehicle Coalition. And  
21 Commissioner Boyd, I appreciate the apology for the slim  
22 notice, but I'm not too worried about it, my kids only  
23 let me know today that Christmas is next week.

24 MS. HOLMES-GEN: Ditto. Bonnie Holmes-Gen,  
25 American Lung Association in California. Glad to be

1 here.

2 MR. OLSON: Tim Olson, Advisor to Commissioner  
3 Boyd.

4 VICE CHAIR BOYD: Alright, Jim, I guess we'll  
5 turn the microphone back to you now -- oh, I forgot the  
6 people out there and they just let me know they're out  
7 there. Are there any Advisory Committee members on the  
8 phone who would like to identify themselves?

9 MS. BROWN GARLAND: Hi, this is Lesley Garland  
10 with Western Propane Gas Association.

11 VICE CHAIR BOYD: Good morning, Lesley. Any  
12 others? Okay, hearing none, now Jim I will turn it over  
13 to you, and thank you.

14 MR. MCKINNEY: Great. Thanks very much.

15 VICE CHAIR BOYD: I think it's your microphone  
16 up there that if something happens it causes that noise,  
17 I'm not sure, but we had the same problem last Wednesday  
18 in our Business Meeting and it seemed to have something  
19 to do with the mic at the podium, so just warning  
20 everybody ahead of time there might be a large  
21 electronic shock every once in a while.

22 MR. MCKINNEY: And the appropriate response is  
23 911 so they can get me to the hospital as quickly as  
24 possible, thank you.

25 So again, welcome. Thank you, Commissioner

1 Boyd, for your opening remarks. This is the first  
2 report to the Legislature, to our Advisory Committee,  
3 and to our key stakeholders on the benefits of the  
4 Alternative and Renewable Fuel and Vehicle Technology  
5 Program. This is required by statute, AB 109,  
6 Assemblyman Nunez, that we report this through our IEPR  
7 process, or Integrated Energy Policy Report.

8 I want to say a couple of thank yous first,  
9 first and foremost, on behalf of staff we want to thank  
10 Commissioner Boyd, Vice Chair of the Commission, for his  
11 policy leadership in the Alternative Fuels and Vehicle  
12 Technologies arena. He has steadfastly promoted  
13 alternative fuels, biomass-based fuels, waste-based  
14 fuels, and is really just done a wonderful job of  
15 setting the vision and course for this program. So  
16 we're pleased to offer a bit of a Christmas present,  
17 make sure we could have this report and workshop  
18 available before his pending retirement.

19 VICE CHAIR BOYD: Thank you.

20 MR. MCKINNEY: I also want to acknowledge our  
21 report team, so Charles Smith, the guy doing 10  
22 different things, which he always does, our Lead Author,  
23 Andre Freeman, could you either stand or raise your  
24 hand? Thank you, Andre, just a whiz at the numbers and  
25 he's one of our Lead Analysts. Darcie Chapman and Pilar

1 Magana who put together the Jobs, Benefits and Workforce  
2 Training part of this. Pilar is busy at the WebEx  
3 there. And then I want to acknowledge Jennifer Allen,  
4 as always, just one of the rocks of our program, Senior  
5 Supervisor, and she's been the Project Manager for this  
6 report.

7           The legislative requirement as per AB 109 is  
8 for the Commission to evaluate and report on a list of  
9 funded projects, so we do that here. I want to direct  
10 your attention to the second part of the report, and we  
11 call it the Compendium, or the Catalogue. This lists in  
12 some detail every Grantee and every project for the  
13 first two fiscal years of our funding cycle. I think  
14 it's a great read. The people we work with, the people  
15 who actually are making these technologies work, are  
16 first rate and there are a lot of fun projects in there.  
17

18           The legislative requirement is that we report  
19 on the expected benefits in terms of petroleum  
20 reduction, GHG emissions reduction, and criteria  
21 emissions reductions. We're supposed to discuss  
22 obstacles and challenges, and then recommendations for  
23 future action. Because workforce development, job  
24 creation, is such a key part of our program, we have  
25 also added a chapter in that, in the report, although

1 that is not part of the AB 109 requirement.

2           And I want to clarify, too, that the  
3 legislation requires us to report on the progress and  
4 benefits of the projects that we fund, so some of the  
5 projections that I'll discuss later on, these are not  
6 modeling projections, these are not forecasts, these are  
7 tools for us to report on the expected benefits of the  
8 projects we fund. So that's a pretty important  
9 difference with some of the other numbers you're going  
10 to see out there these days on Alternative Fuels and  
11 Vehicles.

12           I think, as most of you know now, ARFVTP is  
13 kind of a modest mandate to the Commission, which is to  
14 help transform our transportation market into a diverse  
15 collection of Alternative Fuels and Vehicles. It's a  
16 two-part program; we administer about \$100 million a  
17 year for seven years with an emphasis on infrastructure  
18 and heavy-duty vehicles and fuel production. Our  
19 colleagues at the Air Resources Board, through the Air  
20 Quality Improvement Program -- and we have Peter here  
21 representing that and, of course, Tom Cackette --  
22 administer what was supposed to be \$50 million, it's now  
23 down to about \$30 to \$40 million a year on different  
24 parts of that and they primarily are using that money to  
25 fund light-duty electric vehicle deployment with the

1    *Leafs* at this point.

2                   When we talk about the markets, a lot of times  
3   those of us in Sacramento, we talk to each other, we  
4   talk about policy, we talk about models and projections,  
5   the people that I really enjoy working with are the  
6   people heading up these companies that are developing  
7   the technologies that are really going to take us to the  
8   future of a low carbon transportation system.  They're  
9   the ones with the vision, the engineering skills,  
10  they're the ones taking the financial risk and, truly,  
11  they are implementing the policy vision that those of us  
12  in Sacramento discuss so much.  It's honestly one of the  
13  favorite parts of my job, it's a real hoot to get these  
14  guys in and see and hear their enthusiasm, and the ideas  
15  that they have, whether it's on the vehicle side or the  
16  fuel side.

17                  And our Grantees, I think we literally have at  
18  least one company working out of their house, and we  
19  have several national level corporations and a few  
20  multi-nationals.  So it really covers a wide gambit of  
21  technology developers.

22                  The staff approach for this first report, one  
23  thing we've tried to do is keep a very complex subject  
24  area as simple as possible.  We use transparent methods  
25  and conservative assumptions pretty much at every step

1 of the way here. The data that we come comes directly  
2 from our Grantees or grant recipients, the vehicle  
3 manufacturers, or OEMs -- I'll use that word today --  
4 Air Resources Board staff, and published reports. We  
5 really did not want to get into generating numbers on  
6 our own, generating assumptions on our own, so we used  
7 accepted and publicly available assumptions and data  
8 whenever possible.

9           We want to provide information that is  
10 reasonable, plausible, informative, and defensible. So  
11 we're not trying to be grandiose here. A lot of people  
12 have said that we're being modest and conservative; I  
13 think that's good feedback because, again, we don't want  
14 to overstate what we're trying to do. Our projections  
15 with everything except on the jobs front are expressed  
16 in terms of ranges, projecting into the future to 2020  
17 as an art, not so much a science, so we want to have a  
18 series of ranges there, and I'll explain that more. And  
19 again, we want to be modest and not overstate the  
20 potential benefits of the program.

21           The way the report is structured and the way  
22 this presentation is structured, we're going to have a  
23 summary of program funding, then I'm going to talk about  
24 near term changes and alternative fueling infrastructure  
25 and vehicles, and these are directly attributable to

1 ARFVTP funding. The next part is the estimated benefits  
2 2012 through 2020, and those are benefits fostered by  
3 ARFVTP. And then lastly, we'll talk about the job  
4 creation benefits.

5 General status of our program, we are in year  
6 four of a 7.5-year program. We have adopted three  
7 Investment Plans to date totaling \$362 million. Again,  
8 this report and workshop are a report on the first two  
9 fiscal years, which is about \$198 million. The fourth  
10 Investment Plan proceeding is underway as we speak, so  
11 we'll have another \$100 million to work with there. One  
12 of the big milestones of the program was a major lessons  
13 learned workshop back in November of 2010.

14 I think it's really important to put the  
15 results of our funding program into the context of  
16 California, the "Nation State" as Commissioner Boyd  
17 likes to call us, so population -- 37.7 million, state  
18 GDP, \$1.9 -- I don't know if that makes us eighth or  
19 ninth right now, globally -- light-duty vehicles, we  
20 have 26.5 million vehicles on the street, we have almost  
21 one million trucks, so that's medium-duty and heavy-duty  
22 trucks Class III and above. Trucks are important, they  
23 comprised only four percent of the vehicle population in  
24 California, but they consume 16 percent of the total  
25 fuel, and so there are commensurate GHG emissions and



1 criteria emissions to go with that. Our current annual  
2 fuel consumption is 18.8 billion gallons, that's about  
3 15, perhaps 16 gallons of gasoline and the rest is  
4 diesel, 1 billion gallons of that is ethanol. Ninety-  
5 one percent of the petroleum fuel that we use here is  
6 petroleum-based and, as a whole, for the transportation  
7 sector, we contribute 42 percent of the State level  
8 greenhouse gas emissions.

9           So going into part one, enumeration of the  
10 dollars and the grants, so this particular slide  
11 summarizes Table ES-1 in the report, which goes into  
12 quite a bit more detail. This represents a portfolio  
13 approach, so as Commissioner Boyd has said, we're not  
14 looking for silver bullets, we're looking for silver  
15 buckshot that we can use. This is also the approach  
16 that U.C. Davis recommends and this goes back to the  
17 initial set of modeling projections done by the Berkeley  
18 and U.C. Davis group, as the Low Carbon Fuel Standard  
19 was getting kicked off. So, looking at electric drive,  
20 so 62.4 million and, again, this is the first two fiscal  
21 years, so 197.4 million total that we're reporting on  
22 electric drive, so that represents almost one-third of  
23 program expenditures. And with this, we're funding  
24 charging, batteries development, manufacturing for  
25 controllers, vehicles, and batteries again, and trucks

1 in the electric sector.

2 For biofuels, \$64 million, again, almost a  
3 third of our funding, 25 projects, and that covers fuel  
4 production and infrastructure, both E-85 and the bulk  
5 terminal storage needed to get biodiesel onto the  
6 market.

7 The gaseous fuels, that's natural gas and  
8 propane that is primarily infrastructure, and then truck  
9 deployment. Hydrogen, \$22.7 million to date --

10 MR. CARMICHAEL: Jim, just a quick question on  
11 that?

12 MR. MCKINNEY: Yes, Tim.

13 MR. CARMICHAEL: Is the biomethane  
14 infrastructure in the gaseous fuels line?

15 MR. MCKINNEY: That's a good question.

16 MR. CARMICHAEL: Thank you.

17 MR. MCKINNEY: We put biogas into the biofuels  
18 category, so I'm sorry I forgot to say that -- biofuels  
19 includes biogas, biodiesel, renewable diesel, and  
20 ethanol, and then renewable gasoline. So, thanks, Tim.  
21 Hydrogen, \$22.7 million, about 11 percent program  
22 funding, five big projects to date, that's for fueling  
23 infrastructure and for the development of standards  
24 through the California Department of Food and Ag,  
25 Weights and Measures, so that we can actually have

1 retail sales of this very important fuel.

2           In reporting on Benefits, there are a couple  
3 of different ways to think about the way our funding is  
4 allocated. What this slide shows here is our program  
5 investments by fuel type and then broken out by what we  
6 call the commercialization phase. So most of the heavy-  
7 duty R&D work being done nationally in California for  
8 Alternative Fuels and Vehicles is funded through the  
9 Department of Energy, the National Labs, there's a lot  
10 of research going on within the U.C. System, and then  
11 here at the Commission, our own PIER Program, Public  
12 Interest Energy Research Group cycles about \$80 million  
13 a year annually. So what these charts show is that, for  
14 electric drive, most of our money is in commercial  
15 deployment and pre-commercial demonstrations. So,  
16 again, that's infrastructure and truck development. And  
17 biofuels, there's a lot of development work to be done  
18 on the biofuels sectors, so you can see we spread across  
19 more and we have a number of projects in the feasibility  
20 and development phases.

21           For gaseous fuels, again, that's natural gas  
22 and propane, and most of that is for commercial  
23 deployment. The same with hydrogen, nearly all that  
24 money is for the commercial deployment of fueling  
25 infrastructure, the \$4 million I referenced is to CDFA,

1 weights and measures for retail fueling support and  
2 getting those programs in place. For Workforce  
3 Development, \$15 million allocated thus far and several  
4 million for program support.

5           One of the critical parts of our program is  
6 that we require match funding from all of our Grantees,  
7 unless they're public agencies. So what this chart  
8 shows is that, for the 65 projects that we funded  
9 totaling \$175.5 million, there has been \$375.5 million  
10 raised with that, and that's a leverage ratio of about  
11 1.2:1. For the public match side, most of this has come  
12 through the DOE's ARRA Program, American Reinvestment  
13 and Recovery Act, so we are funding nine projects at  
14 \$36.5 million and the DOE match is \$105.3. One of the  
15 fun things to hear is that several of our Grantees are  
16 reporting that, as they get our grants, they're able to  
17 turn around and leverage that in turn for other grants,  
18 and I think that's true with the Transpower and some  
19 other companies.

20           I want to spend a little bit of time talking  
21 about this slide. There's a lot of good information  
22 here and this -- again, so we're reporting on benefits  
23 in kind of two big phases, this is near term results and  
24 the second part will be estimated benefits through 2020.  
25 Our general strategy when we were setting up the program

1 in the earlier years was to frontload infrastructure  
2 funding, especially for electric vehicles, fuel cell  
3 vehicles and hydrogen, and in the biofuels arena, so the  
4 E85 retail network. Our strategy was that, by putting a  
5 lot of money into the infrastructure, we'll send a  
6 signal to the equipment manufacturers, the vehicle  
7 companies, that California is serious about a low carbon  
8 transportation future, we want to do business in that  
9 arena, and we want people to come to California and  
10 spend money and put their vehicles and their products  
11 into California markets.

12           And what we like about this slide is that we  
13 think we're getting some good initial results. So for  
14 the electric drive area, kind of the baseline level for  
15 2009-2010 was about 1,270 charging stations. At full  
16 build-out, the projects that we are funding, we'll  
17 increase that almost four-fold, 344 percent, so we're  
18 funding 4,375 charging stations. That will make us the  
19 largest network of electric vehicle charging stations in  
20 the country.

21           For E85, we currently have 39 fueling  
22 stations, our grants are going to more than triple -- or  
23 almost triple that -- to 85 fueling stations, so that's  
24 a 218 percent increase. Natural gas is a more mature  
25 market, so we had 443 fueling stations out there

1 already; we're adding 20 stations or five percent.  
2 Hydrogen and fuel cell vehicles, this is just critically  
3 important as we help launch deployment of fuel cell  
4 vehicles in California. Currently, there are six  
5 stations, five more under construction. We're going to  
6 double that with ARRA funding and a full build-out of  
7 the stations that we fund will account for 73 percent of  
8 the throughput for fuel cell vehicle fueling in  
9 California.

10           Moving to the vehicle side, electric cars, so  
11 again, the bulk of this is funded -- electric car  
12 vouchers -- the bulk of this is funded through our  
13 colleagues at the Air Resources Board and the program,  
14 Clean Vehicle Rebate Program, they've got dynamite  
15 status reports that you should look at on their website.  
16 They have funded 2,236 EVs; we granted \$2 million to  
17 that program, so we got kind of a modest boost at three  
18 percent, 379 vehicles.

19           The Electric Truck sector really caught us by  
20 surprise, we thought there were many more years of  
21 developmental work to go into that before trucks hit the  
22 commercial markets, but some of the companies have  
23 surprised us, as well as some of the big package  
24 delivery firms. So we allocated \$4 million of that, ARB  
25 administered it through their HVIP, Hybrid Truck

1 Incentives something something program, excuse me, and  
2 we were able to fund 160 trucks out of that. So again,  
3 thanks ARB for taking that money and putting it to good  
4 use. So 11 percent boost in a very early market.

5 Natural Gas Trucks, again, a bit of a more  
6 mature market. We have added almost 900 trucks through  
7 our funding, that's both on the DOE ARRA Grants and then  
8 our buy-down program, so that's a six percent increase.

9 The way we interpret this is that this is a  
10 pretty good indicator that our strategy might be  
11 working. This represents a down payment on the program  
12 and, again, the first two years of funding, we're very  
13 very excited by some of the initial results. One of the  
14 other fun factoids that we have in the report is that 40  
15 percent of all the Nissan *Leafs* available in the United  
16 States are here in California, the total is about 2,800  
17 vehicles, and one-third of all the *Volts* from Chevrolet  
18 are also here in California. So that's 1,300. So,  
19 again, very good early market response through our  
20 infrastructure funding. Any clarifying questions on  
21 this table?

22 MS. HOLMES-GEN: I'm just curious on the  
23 electric charging stations, how many are public vs.  
24 residential?

25 MR. MCKINNEY: Excuse me?

1 MS. HOLMES-GEN: The public vs. residential,  
2 how many? Can you say, in the electric category?  
3 Electric charging stations?

4 MR. MCKINNEY: We are still determining that,  
5 but we did shift the bulk of that funding to residential  
6 so people can do home charging and take advantage of the  
7 off-peak rates. Tim?

8 MR. CARMICHAEL: Jim, just one other question.  
9 And maybe I should do more reading, but what's the  
10 source for the natural gas truck numbers? Not the ones  
11 you funded, but the baseline you --

12 MR. MCKINNEY: Yeah, I think the baseline is a  
13 mix from the DOE Fact Book, we thought some of that came  
14 from your organization.

15 MR. CARMICHAEL: Yeah, I'll go back and check.

16 MR. MCKINNEY: Okay.

17 MR. CARMICHAEL: Thanks.

18 VICE CHAIR BOYD: Excuse me, Jim. This is Jim  
19 Boyd. Building on what Tim just said, I want to remind  
20 everybody of the last bullet on page four is "do not  
21 overstate program benefits," this is something that is a  
22 problem. We would like to maximize the benefits, its  
23 good marketing for this program to honestly and  
24 truthfully have the best possible benefits. I do think  
25 we suffer a little from, oh, being a little cautious,



1 we've gotten so much criticism on everything we do these  
2 days, and I think there's a tendency to be awfully  
3 conservative. So if any of you have good hard data that  
4 shows that maybe, you know, we've been a little too  
5 conservative, that would be frankly helpful to us, to  
6 the program, to our mutual interests, and what have you.  
7 This discussion suddenly reminded me of that, so  
8 anywhere any organization or folks can help beef up our  
9 numbers, or make them more solid -- in either direction,  
10 but hopefully positive, that would be good. Thanks,  
11 Jim.

12 MR. MCKINNEY: Thank you, Commissioner.  
13 That's actually a nice segue to one of the speaking  
14 points I was going to use for - kind of one of our  
15 maxims here at the Commission is, if you don't like our  
16 numbers, give us something better and help us do a  
17 better job, and I don't mean to be flippant about that,  
18 I really mean it. This represents staff's best  
19 available effort to collect the best available data and  
20 use the best available methods we think are appropriate  
21 for this report. If you have recommendations for other  
22 data sources, or other methods on how to make this  
23 report more informative, ground truth it some more,  
24 please, share that with us and you can do that today, or  
25 through written comments, or through staff consultation.

1           As we get into the second part of the report,  
2   and again, so this is estimated benefits, so 2012  
3   through 2020, Electric Drive, Biofuels, Natural Gas,  
4   Hydrogen, and then Jobs and Workforce Training. So this  
5   all happens in a context, so some people have said, "Oh,  
6   your results are quite modest," it's not our job to  
7   fully implement the AB 2020 goals; we are a piece of the  
8   puzzle, there are some other really big factors that  
9   play here as California works to meet its low carbon  
10   transportation goals, so the rate of change for  
11   Alternative Fuels and Vehicle Technologies is driven in  
12   large part by regulation, so these are state and  
13   national climate change and air quality regulations, and  
14   then also vehicle efficiency laws and standards. You  
15   add to that some pretty important market factors, one of  
16   the biggest is the ever changing price of petroleum, is  
17   it going to go up or down? Is it going to really spike  
18   or not? And then supply factors into that, as well.

19           Another thing is differential lifecycle costs.  
20   For vehicles, one of the interesting things we're  
21   finding on electric drive vehicles is that the operating  
22   costs are one-fourth that of a gasoline powered vehicle,  
23   and this is something that we have to help consumers  
24   understand. Ultimately, it is the choices of the fleet  
25   operators and the individual consumers that will dictate

1 how many vehicles and how much alternative fuel is put  
2 into the market. So our program, we foster market  
3 adoption and advancement, and our money, as Commissioner  
4 Boyd said again earlier, is to seed funding to spur  
5 innovation and deployment.

6           One of our goals here, too, is to create what  
7 we call a dynamic market, or create market synergies,  
8 and by that I mean a nice mix of technology development,  
9 manufacturing, and then sales and use, and we're already  
10 starting to see some of those feedback loops occur. We  
11 cannot match the funding of the vehicle manufacturers,  
12 they are putting hundreds of millions, if not billions  
13 of dollars into investment into the next generation  
14 fuels, whether it's hydrogen vehicles, electric  
15 vehicles, natural gas trucks, or what have you. So  
16 that's their job, but again, our job is to supplement  
17 that funding.

18           I'm going to spend a little bit of time  
19 walking through the methods and assumptions because it's  
20 really important to understand how we derive the numbers  
21 and how we think they should be used. First off, we're  
22 still early in the program; although we've got almost  
23 \$200 million locked up in contracts, very little of that  
24 has gone to construction. On the vehicle side, you  
25 don't have permitting and CEQA to deal with, but if

1 you're building infrastructure, especially some of the  
2 more complex fuel production infrastructure, permitting  
3 and CEQA have a role to play there.

4           Again, I've talked about our conservative  
5 approach and assumptions and, again, all of our primary  
6 data comes directly from our Grantees, from the OEMs,  
7 from recognized third party stakeholders, and our fellow  
8 public agencies. One of the main tools that we use, and  
9 I really want to recognize Pilar Magana for this, was to  
10 develop an electronic survey tool based on a  
11 Surveymonkey that we sent to all of our Grantees, we got  
12 I think over a 90 percent response rate on that, and  
13 they were pleased to work with us. So, again, most of  
14 this information is coming directly from our Grantees.  
15 We also pulled data from our Grant files and then  
16 follow-up phone interviews again with our Grantees.

17           It's really easy to put yourself in a box if  
18 you use point projections going forward, so we express  
19 everything in terms of ranges. What we're trying to do  
20 with, say, the high range estimate is assume optimal  
21 market conditions, so for alternative fuels and  
22 vehicles, that would mean high petroleum prices so  
23 alternatives look more favorable, rapid decrease in cost  
24 for the new fuels and vehicles coming into market, and  
25 good response from consumers, no horror stories with the

1 early adopter crowd.

2           The low scenario is intended to illustrate  
3 challenging market conditions, and by that we mean, say  
4 petroleum prices stay low so there's less incentive to  
5 switch, perhaps there's trouble getting technology  
6 deployed early on, perhaps there's a poor response from  
7 different parts of the consumer base. The job estimates  
8 are also based on our Grantee data and job numbers are  
9 always controversial and especially in an economy such  
10 as ours, we think this is the best available option that  
11 we can get without going to post-construction  
12 verification or audits.

13           For electric vehicles and fuel cell vehicles,  
14 the method we use here is what we call the top down  
15 approach, again, if you think back to all of the  
16 individual chargers that we're funding, the different  
17 fuel stations, we think it's impractical to try to  
18 collect data at the charger level, to try to collect  
19 throughput at the charger level. So we consulted with  
20 the ARB staff on this one and they think we've got the  
21 right approach. And by top down, we mean attributing  
22 or, say, associating the benefits of our investments  
23 with the vehicle end use, so that's as the vehicle  
24 fleets get out on the road. And that's really where you  
25 see the savings for petroleum and greenhouse gas

1 emissions.

2           We are also funding -- especially with  
3 electric drive, we know there's a lot of work that needs  
4 to be done on battery development, controllers, motors,  
5 and assembling those in drive trains are complex, so  
6 we're putting a lot of money into that area. And we  
7 think the vehicle numbers that we're using serve as  
8 proxies for these investments in batteries and  
9 controllers.

10           Our data sources for the EV high/low scenario,  
11 that comes from the PV or Plug-In Electric Vehicle  
12 Collaborative, and I'll talk more about that later. For  
13 the Fuel Cell Vehicle, these numbers on the high end  
14 come from the ARB's just released Clean Fuels Outlet  
15 Draft Regulation, they also come from the OEM Survey  
16 that we do jointly with ARB staff, and that's a critical  
17 data point, and then we also use historic data for  
18 natural gas vehicle adoption. For Natural Gas Trucks,  
19 we use a bottoms up approach, so we're really just  
20 focusing on the companies that we're funding through  
21 both our grants and our vouchers, so we call this the  
22 bottoms up approach. So this includes the current  
23 vehicle counts and the benefits -- let me catch up here  
24 -- so this is based on the actual vehicle counts that  
25 we're funding.

1           For Fuel Production, again, this is the three  
2 fuel area, so biogas, biodiesel, and ethanol. And we  
3 used the bottoms up approach, so we're only reporting on  
4 the 17 projects that we are funding here. Again, this  
5 is not a state level projection, we are -- I won't say  
6 grossly -- we are intentionally underestimating fuel  
7 production capacity, or potential in the State of  
8 California. Low case reflects current funding levels  
9 and, for the high case, we asked our Grantees, "Under  
10 optimal market conditions, how many of your projects do  
11 you think you could build through 2020?" So that's what  
12 the high case will represent.

13           Now turning to Estimated Benefits, I'm going  
14 to start with Electric Vehicles, so again, \$62.4  
15 million, about one-third of our funding for the first  
16 two years, \$17.4 of that went into chargers, \$16.5 of  
17 that went into vehicles, so \$6 million that we  
18 transferred to the Air Resources Board, and then the \$10  
19 million for Advanced Technology Demonstrations through  
20 our grant, manufacturing received \$25.9 million, and  
21 that covers vehicle assembly, battery development, and  
22 controller development here in California.

23           On the charger side, the big companies that  
24 we're working with are Coulomb, ECotality, and Clipper  
25 Creek, and they have contracts also with DOE and the

1 OEMs to help support deployment of the *Leafs* and the  
2 *Volts* as those come into California.

3           On the manufacturing side, just a few examples  
4 here, so Electric Vehicles International, or EVI, due to  
5 our grant and the market potential in California, they  
6 moved their manufacturing plant up from the Mexican  
7 border area into California, they then turned around and  
8 won a big grant with United Parcel Service for 100  
9 Electric Trucks. TransPower is a company I personally  
10 enjoy, they're a bunch of former aerospace engineers  
11 down in the Los Angeles area, they're putting together a  
12 Class A Electric Truck that can be used in port drayage  
13 operations, so moving the big container boxes around.  
14 Zero Motorcycles down in Santa Cruz, electric  
15 motorcycles are kind of fun, they're a good company to  
16 work with. And we had a European delegation several  
17 weeks ago and they had some pictures up, and they had a  
18 sign showing Zero Motorcycles, and they said, "Yeah, we  
19 import those into Holland and they're used." And it was  
20 like, "Wahoo!" That was a hoot to hear about that one.

21           And on the battery side, we've got some good  
22 grants out to Envia and Qualion, two world class battery  
23 developers and then Leden, as well.

24           MS. HOLMES-GEN: Jim?

25           MS. MCKINNEY: Yeah.



1 MS. HOLMES-GEN: This is Bonnie Holmes-Gen.  
2 I'm just wondering, and maybe it's somewhere in here, do  
3 you have an estimate of how many companies have moved  
4 their operations, have begun or moved operations to  
5 California because of the investment funds available? I  
6 keep hearing you refer to this and it's so important,  
7 and I've heard it referred to in testimony several  
8 times, and that would be such helpful information to  
9 give.

10 MR. MCKINNEY: I'm going to look at Pat here  
11 for confirmation. I think it's eight? Seven or eight?

12 MR. PEREZ: Six.

13 MR. MCKINNEY: Six, excuse me. Maybe you can  
14 share Tom's, it's a little closer there.

15 MR. PEREZ: Yes, Bonnie, we have about six to  
16 eight companies that have actually come to California  
17 because of not only California's environmental policies,  
18 but also energy policies, and particularly this program,  
19 so it's a combination of drivers, both on the  
20 environmental and energy front that are driving  
21 manufacturing companies to come to California. Those  
22 include companies -- and I don't recall their names off  
23 the top of my head -- from Mexico that have relocated  
24 here, I think one Canadian firm, we have another  
25 electric vehicle component company from Boulder,

1 Colorado that is shifting operations to California. We  
2 could give you the -- unfortunately, I have the list  
3 upstairs, but I could share that with you later.

4 MS. HOLMES-GEN: Great, thank you.

5 MR. MCKINNEY: Propel Biofuels is another  
6 company that came down from Washington State to set up  
7 operations here in California.

8 MS. HOLMES-GEN: And how many jobs or, you  
9 know, if you have other indicators about what these new  
10 operations represent for the state.

11 MR. MCKINNEY: Yeah, we didn't sort the jobs  
12 data with that one, but we could do it.

13 VICE CHAIR BOYD: This is Jim Boyd. Now that  
14 Bonnie has broached the subject of jobs, that's another  
15 one I've loaded here in the list. And just based on  
16 personal interaction with people within the  
17 Administration are interested in jobs, this is one that  
18 we probably could use some help with because, as Jim  
19 indicated and as the slides indicate, the data our staff  
20 is using is data from the Grantees. But in discussions  
21 with the Governor's Jobs Czar, etc., there's a lot of  
22 thought that we're really underestimating the jobs  
23 impact here by not portraying enough of the multiplier  
24 effects involved in this, that and the other, and I  
25 think we probably do need to do, well, we need help. I

1 think we've done all we could think of at the moment,  
2 but we probably could use help from others on what that  
3 might mean. I would say this is probably the number one  
4 area where Energy Commission staff is ultraconservative  
5 and risk averse because this kind of information has  
6 been highly criticized in other hearings relative to  
7 other economic stimulus type programs as being over-  
8 stated, or unproveable, or this, that and the other.  
9 It's hard to make the point to many people that the  
10 legislation that created this program was not a jobs  
11 creation program, that is, a spillover positive effect  
12 of a program like this. But nonetheless, I think if  
13 anybody has any suggestions, it would be much  
14 appreciated, we may have to call upon you, or the staff  
15 here may have to call upon you in explaining the program  
16 to any one of a number of legislative committees, should  
17 they be so oriented to want to do, which I'm sure they  
18 will be. So, in any event, another plea to folks for  
19 any thoughts and ideas that give us pretty rock solid  
20 data would be helpful.

21 MR. MCKINNEY: Great. Thank you,  
22 Commissioner. A Policy Analysis Organization called  
23 Nexten released an interesting report and I was asking  
24 Charles where that was, so on page 16 of the Staff  
25 Report, they are calculating an additional \$840 million

1 in venture capital investments into Electric Vehicles  
2 and related industries in 2010, and according to their  
3 figures, it says 60 percent of all the VC investment in  
4 this world -- in this arena on a global basis. So lots  
5 of good ways to calculate those numbers and different  
6 ways of looking at job creation and economic benefits.

7           What this slide shows is what we think are,  
8 again, plausible and informative ranges of PEV  
9 deployment in California through 2020 and there's a  
10 series of lines here on the graph, the green line is  
11 what we think is the high case, this comes from the PEV  
12 report, *Plug-In California*, I think it's called. So  
13 they're estimating a total of 500,000 to one million EVs  
14 in California through 2020. The BE side, or Battery  
15 Electric side of that would represent 26 percent of that  
16 figure, and the Plug-In side would represent the other  
17 74 percent. So for the BEV chart, which is the top  
18 chart, the green line is the high case from the PEV  
19 estimate, and that comes in at a little over 250,000  
20 vehicles by 2020. The red line is the low case and  
21 that's about 130,000. The orange line at the top is an  
22 extrapolation of historic sales of the Prius in  
23 California, which has had a very steep adoption rate,  
24 it's kind of a hard act to follow, but that's there for  
25 context. We also include the ZEV Compliance Scenario,

1 so for BEVs that's about 200,000 vehicles by 2020, and  
2 then the lower light blue line is one of the LCFS  
3 compliance scenarios. So lots of different people doing  
4 projections in this very important arena through 2020  
5 and beyond. Again, we're not saying one of these is the  
6 best or the right, we think our range represents, again,  
7 plausible, defensible, and informative range of what the  
8 future might look like.

9           On the PHEV side, on the bottom slide, again,  
10 our high case comes in, the green line, at just over  
11 700,000, or 750,000 vehicles, our low case is at about  
12 380,000. The ZEV Compliance Scenario is at 600,000  
13 PHEVs and the LCFS Scenario is just under that. And our  
14 orange line, or again, the extrapolation of the Prius  
15 sales falls just above the low case.

16           In terms of Petroleum Reduction, we  
17 consolidated the numbers for the battery electrics and  
18 plug-in electrics, so the high case, about 250 million  
19 gallons of petroleum reduction in 2020, the low case  
20 about 125 million gallons.

21           I'm going to turn now to biofuels production,  
22 estimated benefits. Maybe a couple words before I dig  
23 into the heart of the slide here. We view biogas as an  
24 extremely competitive biofuel, especially at this stage,  
25 in the alternative fuels markets in California. It has

1 the lowest carbon intensity of any of the commercially  
2 available fuels, comes in at about 12 grams CO<sub>2</sub> per  
3 Megajoule, and another thing we're learning is that the  
4 new gasification technologies can handle a wide array of  
5 the feedstocks that we really thought, and the common  
6 wisdom was, that only cellulosic processing could  
7 handle. So a lot of the starch-based feedstocks, the  
8 waste feedstocks, you can run through a gasifier and get  
9 a very low carbon product coming out of that.

10           We opened our last Biofuel solicitation so  
11 that biogas companies could also compete on the biofuels  
12 side and they frankly out-competed them in terms of  
13 product, production levels, and cost. So I think we  
14 have about \$35 million that's gone into biogas  
15 development here in California. Some of our big  
16 Grantees are High Mountain Fuels, that's a Waste  
17 Management, Linde Consortium down in Southern  
18 California, the Ventura County Landfill. At production,  
19 they're going to produce enough biogas to power 600  
20 heavy-duty refuse hauling trucks there in Ventura  
21 County. CR&R out of the Riverside area in San  
22 Bernardino County has got the first commercially  
23 available gasifier hooked up for pre-diverted organic  
24 waste material, and that material, the gas product, is  
25 going to be used to help fuel their fleet of refuse

1   hauling trucks, and then they'll wheel the rest into the  
2   pipeline for transportation end uses. Clean World here  
3   in Sacramento, they're going to put in gasifiers at one  
4   of the landfills. And then North State Rendering up in  
5   the Oroville area, it's a big rendering facility, and  
6   they're going to put in some heavy-duty gasifiers there  
7   and, again, use the biogas for a combination of their  
8   trucks and then back into the pipeline.

9               So we have six production projects and then  
10   three are pilot and feasibility projects, some really  
11   important and innovative work that we're funding here.  
12   G4 is a small group of former natural gas engineers out  
13   of British Columbia, and they are tweaking gasification  
14   technologies to handle Woody Biomass, so this is  
15   something that's not easily done with cellulosic  
16   technology because of the resins and the lignins in  
17   there, but with the gasifier, they really think they can  
18   make a go of this. And the waste-based resources  
19   potentially available in California through the Biomass  
20   Collaborative numbers are about 14 million bone dry tons  
21   a year, and you can get a lot of biogas out of that.  
22   Eurisco is demonstrating a technology out of Argonne  
23   National Labs, which is to accelerate methane formation  
24   at wastewater treatment plants through anaerobic  
25   digestion. That is our carbon negative project, so

1 they're coming in, again, under the zero mark for biogas  
2 production. Some of the impediments to getting biogas  
3 into the markets are gas quality standards. There's a  
4 lot of work that needs to be done there, both on the  
5 technical side and in concert with the PUC, and that  
6 would allow access to infrastructure.

7 Biogas is also a really important feedstock  
8 for renewable hydrogen and, again, as we see fuel cell  
9 vehicle deployment increase, and hydrogen sales  
10 increase, we want to make sure that there's a renewable  
11 portion of that, as well.

12 So in terms of aggregate biogas production  
13 2012 to 2020, high case, we see about 200 million  
14 gallons by 2020, the low case, about 100 million  
15 gallons. Yeah, Steve Kaffka?

16 MR. KAFFKA: Steve Kaffka. Is most of this  
17 scheme thought to be in heavy-duty vehicles like trucks  
18 or do you think that this is light-duty vehicles or  
19 passenger cars?

20 MR. MCKINNEY: No, this is -- the truck market  
21 is the one that's really expanding. There are some  
22 light-duty products coming into the market as we speak,  
23 I think primarily to take advantage of the extremely low  
24 natural gas prices that we're seeing these days, but,  
25 no, we see the truck sector as a critical end product



1 for biogas and, again, renewable hydrogen production.

2 Yeah, Tom?

3 MR. CACKETTE: I was just curious about, as  
4 this expands even further, where do you think the market  
5 goes? And my question is really, will in the long run  
6 people just want to dump this into the pipeline as the  
7 most economic way? Or will they really need to have  
8 vehicles and other things on-site to use the fuel?

9 MR. MCKINNEY: Yeah, that's a critical  
10 question, Tom. There's a lot of modeling work that's  
11 being done at Davis now with Steve, and then some of the  
12 folks under Bryan Jenkins, really looking at the supply  
13 curves for Biogas feedstocks, and then seeing at what  
14 point does it make more sense economically to put that  
15 into power production and help meet the ambitious RPS  
16 goals here in California, or go into the transportation  
17 sector? So right now, the markets are more mature for  
18 getting at into the power production section. We're  
19 looking at this in our Bioenergy Action Plan. So it's a  
20 very good question, Tom. And I'm not going to say I  
21 know the answer.

22 VICE CHAIR BOYD: This is Jim Boyd. I just --  
23 Jim has covered it quite well, this subject has been and  
24 continues to be discussed within the context of other  
25 fora, I believe that's a word, such as the Bioenergy

1 Interagency Working Group, and it's really a very  
2 difficult question to answer because, over time,  
3 thinking has changed, it's driven a lot by the  
4 economics, it's driven a lot by other problems, and I  
5 for one, who have studied the daylights out of this,  
6 don't know the answer to that. Some of it is driven by  
7 geographical economics and the concerns for fire drive  
8 interest in small facilities. The future may be a  
9 combination of fuels only plants, or electricity only  
10 plants, or co-located larger facilities that do some of  
11 both. And as Jim said, that is still being  
12 investigated. And while there are some that profess  
13 that we should dump it all and the effort into one  
14 direction vs. all into the other such as fuels that have  
15 been popular of late, sometimes that doesn't fit the  
16 rest of the model that's been developed about providing  
17 some kind of economic development for rural communities  
18 and communities in the interface between the forest and  
19 the more populated areas, and what have you. So it's  
20 going to be quite an interesting issue for folks to deal  
21 with. And in the context of biopower, the PUC and the  
22 CEC are committing to undertake in the context of the  
23 debate on the public goods charge at the PUC the not yet  
24 finished Bioenergy Action Plan, delayed by the public  
25 goods charge debacle, there's been a commitment to work,

1 you know, to start spending some money on really delving  
2 into the economics of doing some of those things. So,  
3 anyway, watch that space, it'll continue to be muddy.

4 MR. CARMICHAEL: That, Jim -- this is Tim  
5 Carmichael -- and if I could just add a point, I thought  
6 Tom might be asking a slightly different question and  
7 that is, if you only look at transportation and assume  
8 that it's going to go to transportation, does it make  
9 sense to put it into the pipeline in the future as the  
10 volumes increase. And I just want to speak to that a  
11 moment. You both addressed this other issue, is how  
12 much is going to go to transportation vs. energy, and we  
13 don't really know yet. I will say that the providers  
14 have a better margin on the transportation side today,  
15 and so there's an incentive, if you will, for them to  
16 sell, or at least segregate a portion for transportation  
17 because they make more money doing that. And that's,  
18 you know, still providing a great cost savings compared  
19 to petroleum fuels.

20 But just on the transportation side, I talk to  
21 Waste Management, you talk to Clean Energy and other  
22 companies that are developing projects with an eye  
23 towards transportation and energy options, and they say  
24 that you just don't have enough access to vehicles if  
25 you don't have an ability to get the fuel into the

1 pipeline system, even if you're only focused on  
2 vehicles. That is a critical piece of the puzzle going  
3 forward, and that's part of the stuff I'm working on now  
4 is working with the utilities and working with this  
5 agency and others on that piece of the puzzle.

6 VICE CHAIR BOYD: Tim, you remind me that when  
7 we're working with the utilities, we have to wrestle  
8 with the gas quality issue, which they're quite paranoid  
9 about these days. But also, there's been a lot of  
10 discussion of the fact that some places where you can  
11 generate biomethane are so remote from the backbone  
12 pipeline system that there's probably no hope of the  
13 pipeline injection alternative being feasible, and  
14 therefore there's talk about can that gas be turned into  
15 LNG and utilized in that vehicle component where LNG is  
16 attractive. So, yeah, there's a lot, you're right, a  
17 lot of work going on, a lot more probably needs to be  
18 done.

19 MR. CACKETTE: What was really at the -- I  
20 mean, those are both great answers because I know very  
21 little about this area, but what was really at the heart  
22 of my question is that, when you look from the vehicle  
23 side, trying to achieve an 80 percent reduction by 2050,  
24 for example, on the car-like truck side, you know, when  
25 you have a scenario that says you can do that, which is

1 basically electric vehicles and hydrogen vehicles, but  
2 on the truck side, we don't have a good scenario, and so  
3 the question kind of goes to, in the long term, if  
4 biogas is dedicated largely to heavy-duty trucks, for  
5 example, and it's available, that's the market for it,  
6 then those trucks can be individually 80 percent type  
7 reduction trucks, whereas now they run on pipeline  
8 natural gas. Without biogas, you end up, you know, 25  
9 percent or something like that. So in the long term,  
10 natural gas doesn't get us to where we want to go on  
11 heavy-duty. If the biogas is not available, even though  
12 it's benefitting, let's say, the pipeline carbon  
13 intensity, then you still have to come up with a  
14 substitute for fuel, and that would more likely be a  
15 drop in synthetic renewably derived liquid fuel, and so  
16 at this stage in time the question is, you know, kind of  
17 where does the money go depends in part on what the  
18 vision is for biogas. If it is mostly pipeline-related,  
19 that it goes in and benefits that side, then at least  
20 trucks still burning diesel fuel, and it it's available  
21 for -- and if that's the case, then there seems like  
22 there's more emphasis needed on trying to come up with  
23 drop-in liquid fuels that have a liquid diesel that has  
24 a low carbon intensity. So that's kind of where my  
25 question was going because I don't know how that's going

1 to play out.

2 VICE CHAIR BOYD: Well, and that's an  
3 excellent question. One of the dilemmas is, in my mind,  
4 that you and I and a lot of people have been waiting a  
5 very long time for all these drop-in synthetic things to  
6 occur, and they're not happening probably as fast as we  
7 dreamed about several years ago as we sat around  
8 devising the alternative fuels plan for California, and  
9 so a lot -- I mean, there are corners that can be turned  
10 very rapidly as technology delivers us solutions, but  
11 when it doesn't it leaves us stranded here, or hanging  
12 sometimes, as to which way to steer some of these  
13 things. And a lot will depend on the debate that's  
14 going on within the biopower arena, quite frankly, over  
15 the acceptability of biomethane and from where, and  
16 thus, you know, what application can be utilized. And  
17 then there's the renewables requirement which everybody  
18 thinks only about solar and wind, but there is the  
19 dilemma of the sun doesn't shine all day and the wind  
20 doesn't blow always when wanted, and biomass and  
21 biomethane are a renewable source of seven by 24  
22 renewable fuel. So the contest goes on as to where  
23 these things are going and my cloudy crystal ball has no  
24 answers and it's wearing out, I think.

25 MR. CARMICHAEL: And just to correct myself,

1 too, I mentioned trucks, but obviously we need  
2 replacement fuels for railroads, for ships, and for air,  
3 so at least a couple of those probably aren't going to  
4 take biofuels, but it's this balance of, you know, I  
5 don't know how much we have of either one of them -- or  
6 when I say "biofuels," I meant biogas -- but it's this  
7 balance of what's the optimum scenario for where these  
8 renewable fuels go?

9 VICE CHAIR BOYD: Well, and to throw another  
10 card on the table, for several months there's been a lot  
11 of talk about utilizing fuel cells and fairly remote  
12 applications in California to power communications  
13 technology, be it for the railroad industry, or for the  
14 rest of us with all our electronic toys, and then the  
15 California requirement for renewable hydrogen comes into  
16 the equation and remote sources of biomethane, which can  
17 ultimately be used in those fuel cells, comes into the  
18 equation, and somebody could make a business case out of  
19 utilizing some of that remote "can't get into the  
20 pipeline," infeasible to make a transportation tool out  
21 of it into the fuel cell arena. So, yet another  
22 potential outlet, but also something that complicates  
23 the analyses of where things should go.

24 MR. CARMICHAEL: Jim, I'm sure you want to  
25 move on, but I just love talking about nasty gas and

1 biomethane. Can I add one more comment? One more  
2 comment. Tom's question reminds me of another question  
3 that John Boesel and I and our colleagues are wrestling  
4 with and have been for at least a year and a half. I  
5 think it was CALSTART or some people they pulled  
6 together that came up with a near term estimate in the  
7 next decade we can probably provide almost 20 percent of  
8 the trucks with dedicated biomethane, that's a ballpark.  
9 And the question then becomes, is that the best use of  
10 that fuel in the transportation sector? Or, you know,  
11 not talking about 2050, but before 2050, should we blend  
12 that with fossil fuel natural gas and get a 40 or 50  
13 percent reduction for the next couple of decades as  
14 we're still developing these options? And that is a  
15 debate that's ongoing in the industry and it's another  
16 question just to add to this mix about where we go with  
17 this fuel that has tremendous potential.

18 MR. MCKINNEY: Yes, what I -- oh, Steve?

19 MR. KAFFKA: In addition to just the  
20 technological questions and optimization problems that  
21 you've talked about, you have uncertainties in the  
22 policy arena. What will public policy ultimately  
23 prefer, power or fuel? And it's not just a California  
24 question, obviously, it's a national one and to some  
25 degree an international question, and those policies are



1 not necessarily either harmonized or stable, so they're  
2 changing and sometimes unanticipated small policy  
3 choices can have large effects when a technology kind of  
4 meshes, or links to that. So it's a complicated  
5 process.

6 MR. MCKINNEY: And I would just observe here  
7 that one thing the biogas arena does not have is a  
8 champion, the way we have with electric vehicles, the  
9 way we have with fuel cell vehicles, a lot of small  
10 operations working to get biogas out of the dairy feed  
11 lot side, or wastewater treatment plants, into something  
12 that's commercially viable; but thus far there really  
13 isn't a single big voice in California championing those  
14 efforts.

15 I'm going to move on now to the eight projects  
16 that we're funding for biodiesel and ethanol  
17 substitutes.

18 MR. JOLIN: Before you move from biomethane,  
19 can I just ask when the next solicitation is coming out  
20 for biomethane production?

21 MR. MCKINNEY: Would you identify yourself,  
22 please?

23 MR. JOLIN: Yeah, this is Andrew Join.

24 MR. MCKINNEY: That will be part of our next  
25 Biofuels solicitation, which is about \$30 million total

1 for, again biogas, biodiesel, or diesel substitutes, and  
2 ethanol or gasoline substitutes. We hope to get that on  
3 the street early January.

4 MR. JOLIN: Okay, thank you very much.

5 MR. MCKINNEY: So again, for biodiesel and  
6 ethanol, so I'll start with the biodiesel, the five  
7 grants that we have, three of these are for companies  
8 and organizations developing algae-based biodiesel or  
9 diesel substitutes, or renewable diesel. And then two  
10 are for waste-based efforts, one is dairy waste and one  
11 is with fats, oils and grease that we're funding through  
12 EBMUD. What the top chart shows, so again, the low case  
13 is existing capacity of these projects, and it's a  
14 pretty flat line, and all that says is that for this  
15 very small sample of companies, there's no commercial  
16 production yet. When you ask them what do your  
17 production figures look like when you kick in a  
18 commercial production, you essentially get a binary  
19 response, you get this very steep curve. And that's all  
20 that means, you're going from feasibility studies, or  
21 pilot level production, to commercial. And it's a very  
22 steep ramp-up.

23 The blue line there represents the existing  
24 2010 capacity for biodiesel production as registered  
25 with the low carbon fuel standards, so that's about 80

1 million. So you can see the high case, under very  
2 optimistic, say, market opportunities, would come in  
3 just under 400 million gallons a year.

4           One of the big unknowns here is the future of  
5 algae-based fuels and whether that's for a drop-in fuel,  
6 or what have you, we don't know, we know there's a  
7 tremendous amount of money going into that, the markets  
8 are huge, it's very exciting talking with the technology  
9 developers, they're very optimistic, so, you know, we  
10 get a buzz every year or two, there's a different  
11 technology or vehicle area that gets a buzz, so algae  
12 has been the buzz for a while, we'll see how that plays  
13 out.

14           On the ethanol side, again, this is three,  
15 that's not barely -- I wouldn't even call that a sample  
16 size -- one is a commercial project and two are  
17 feasibility. Again, one thing that's really important  
18 to remember with the work that we're funding here is  
19 that we're not funding corn-based ethanol or soy-based  
20 biodiesel. So on the ethanol side, we're funding trials  
21 with sweet sorghum, with Great Valley Energy down in the  
22 San Joaquin Valley, and a group that Professor Kaffka is  
23 affiliated with at the Mendota Beet Cooperative, and  
24 what I like about these guys is that it's a group of  
25 farmer who knew how to grow sugar beets in the Central

1 Valley, and they put together a very exciting project  
2 that combines sugar beets, Ag waste clippings, with  
3 gasification, and they think they can have a carbon  
4 neutral set of products out on the ethanol side and the  
5 biogas side.

6           We're also funding a pilot scale production of  
7 what will be the first cellulosic processor in  
8 California, and that's associated with the -- I'm  
9 drawing a blank here -- it's AE Biofuels, and again, so  
10 they're going to tack that on to the front end of a corn  
11 bio refinery. So a pretty innovative set of stuff that  
12 we're funding here, very low carbon values and, again,  
13 the low range comes in at about 13 million gallons per  
14 year and the high range is 60 million gallons.

15           So the estimated total petroleum reduction  
16 values for the 17 projects that we're funding, the green  
17 line is the high case, so about 630 million gallons per  
18 year by 2020 under optimal market conditions, and in the  
19 low case just over 100 million a year. And for  
20 reference, the blue line, again, that's the combined  
21 2010 capacity for in-state biodiesel and ethanol  
22 production as currently registered with the low carbon  
23 fuel standard, so that's about \$210 million a year. So,  
24 again, under optimal conditions, and I don't want to  
25 overstate this, but you might see a tripling of in-state

1 production capacity on this. I already talked about  
2 Mendota.

3           So again, these are all waste-based feedstocks  
4 or alternative feedstocks that we're funding, and I  
5 think the Mendota project is a great example where  
6 you've got people who know how to grow things, they know  
7 the Ag sector, they're teaming with some of the best  
8 technology developers in the state at U.C. Davis and in  
9 the private sector. What we really need for this stuff  
10 to kick in is for the carbon markets to work, and  
11 whether that's either the Low Carbon Fuel Standard or  
12 Cap-and-Trade, or getting RFS to function properly.  
13 These guys know how to do it, but the revenue streams  
14 aren't there yet, and because petroleum fuels are so  
15 cheap, they cannot make a go of it in the market without  
16 these additional resources.

17           I also want to mention E2, Bob Epstein's  
18 policy shop, they've got a really interesting dataset  
19 that they've developed on in-state production capacity  
20 or potential in California based on a survey of some of  
21 the bigger companies. One thing I think this  
22 illustrates as well is that we can make meaningful  
23 contributions to the Low Carbon Fuel Standard and the  
24 people in my program, we fully support Low Carbon Fuel  
25 Standard, it's critically important that this thing

1 work, and we're helping contribute to that success. And  
2 that's the same with the ZEV program and possibly the  
3 CFO.

4 So we're really all working together towards a  
5 low carbon transportation future. Okay, now, Tom.

6 MR. CACKETTE: When I read this, you know, it  
7 kind of jumped out at you that, in this scenario for the  
8 high case, you're giving money to an entrepreneur who is  
9 trying to get a pilot plant going, and then you turn  
10 around and ask them, "Well, are you going to be  
11 successful? And are you going to build a world scale or  
12 a large scale plant?" And of course, the answer has to  
13 be yes. And so it seemed like the high case just didn't  
14 reflect any judgment or experience on CEC's part or  
15 anybody else's part as to what's likely to happen. Is  
16 there any way that -- and most of the other one do, they  
17 have some kind of a bounding case that says that they  
18 don't go completely crazy and, for example, if you ask  
19 the electric truck guys the same question, they would  
20 tell you that there's going to be tens of thousands of  
21 electric trucks because of grants, for example, because  
22 they think they could sell half for every urban electric  
23 truck as an electric vehicle, so you come up with this  
24 huge number, which I think people wouldn't take  
25 seriously. So what I was wondering is if there's some

1 way of adding CEC judgment to this, things like  
2 historically if you gave grants for pilot plants in the  
3 fuel area, or anybody else has, you know, what's the  
4 success rate? Is it 50 percent of these will become  
5 projects? Or at least, you know, you commented on what  
6 are the economic thresholds that are needed to be able  
7 to get to those points? And, you know, it's okay to  
8 have, well, gee, this looks really great, but I think  
9 sort of asking these people what their success case is  
10 deviates from all of the other scenarios are, and then  
11 when you get to the table, of course, it looks like your  
12 success is totally dominated by that one assumption, you  
13 want to look at the total, you know, petroleum and GHG  
14 reduction that occurs from all of the grant money. So I  
15 was just curious if you had a comment on whether  
16 anything like that is even doable.

17 MR. MCKINNEY: Oh, very much so. And I think  
18 it takes, say, working with us closely, kind of getting  
19 down into the weeds of how we select projects. For the  
20 people that say, "Yeah, I can meet the State's petroleum  
21 demand with my product," those are not viable proposals  
22 for funding, those get weeded out very quickly. If you  
23 kind of break these down, break down the projects that  
24 we're looking at, all of them identify a specific set of  
25 feedstocks, and a technology, and a market niche into

1    which they are going to put their products.  So this is  
2    actually an amalgam of lots of smaller companies, so  
3    I'll use the, say, the G4 example that I talked about  
4    earlier, so gasification of woody biomass, the woody  
5    biomass waste stock feed stream is quite large, there's  
6    a lot of uncertainty about whether that technology will  
7    be viable or not and we've already had a good discussion  
8    on all the challenges to getting that product into the  
9    pipeline.  If you say -- we've got Steve here today, but  
10   you look at the growth potential for the Mendota  
11   Cooperative sugar beet, again, Ag waste, we know through  
12   the Biomass Collaborative what the feedstock potential  
13   is for Ag waste materials.  One of the things that's  
14   affecting this number again is algae-based biodiesel  
15   production.  So it doesn't take -- I think it's good to  
16   be optimistic, but we're pretty tough on our people  
17   proposing what they want to spend on.  So again, we're  
18   welcome to sit down with the ARB staff and help walk  
19   through that some more, but that's how these numbers  
20   were derived.  And, again, this is a range, we're not  
21   saying -- I'm not going to place any bets or anything  
22   like that, that that's the future, we're saying this  
23   illustrates the potential for a future in California in  
24   the biomass-based fuels arena.  Yes, Steve.

25                   MR. KAFFKA:  I've got a couple comments --



1 Steve Kaffka. I think the stability and predictability  
2 of the Low Carbon Fuel Standard is absolutely essential  
3 here. I think, in contrast, at the Federal level, the  
4 Renewable Fuel Standard, is an example of significant  
5 policy uncertainty, particularly in the alternative or  
6 cellulosic fuel area where in the last three years the  
7 mandate for cellulosic fuels has been revised downwards.  
8 And, in fact, the policy itself is a mandate to review  
9 the mandate. So it's extremely uncertain, whereas the  
10 demand for fuel in California to meet the Low Carbon  
11 Fuel Standard provided it remains robust, it's not then  
12 subject to those kinds of same changes that the Federal  
13 policy goes through, provides an incentive to create  
14 these projects and to invest.

15 With respect to at least Ag projects, the  
16 Collaborative now has a tool it can exactly estimate  
17 costs and availability around the state and local  
18 regions for various types of both residues and primary  
19 grown crops, so there are now tools available for  
20 actually getting really hard numbers for at least some  
21 parts of that.

22 MR. MCKINNEY: John Shears.

23 MR. SHEARS: Yeah, Jim, I'm just wondering  
24 because I know E2 has been doing a lot of work, you  
25 know, to help provide some background information to

1 CARB and the Energy Commission, so I'm just wondering to  
2 what extent in terms of these scenarios on the drop-in  
3 fuels, you know, whether you drew upon any of that  
4 information that E2 has culled together and that  
5 informed your scenario work or not.

6 MR. MCKINNEY: So let me be very very clear,  
7 we are trying to estimate a potential future range of  
8 production from our Grantees. We think the E2 data that  
9 Bob Epstein and his team put together is really really  
10 interesting and it helps support the work of our  
11 Grantees in this area, but, again, these are not  
12 projections kind of at a statewide trying to estimate  
13 total fuel production. Other groups are doing that, as  
14 we speak, and I think Steve represents some extremely  
15 important work at Davis, and what's happening in the  
16 drop-in fuel sector, some parts of ARB tend to work more  
17 closely with those programs than we do, it's a bit of an  
18 unknown what that future looks like. So big questions  
19 and we don't know the answers right here.

20 MR. SHEARS: Thanks. I just wanted to clarify  
21 how that E2 worked, linked up with the analysis for this  
22 report. So, thanks.

23 VICE CHAIR BOYD: Yeah, Bob -- this is Jim  
24 Boyd -- Bob and crew were here early on and we had very  
25 interesting discussions with them and found the work

1 they'd done to be extremely interesting and Jim McKinney  
2 has elaborated on that. I want to return to something  
3 that Steve Kaffka, realizing this is my last crack at a  
4 microphone on lots of subjects, and I want specifically  
5 bring up the Federal Renewable Fuels Standard, now in  
6 its second iteration, so known as RFS2. This has caused  
7 some significant policy heartburn for this agency. And  
8 this agency's heartburn has spread to other agencies, as  
9 we have made known our concerns. And Steve touched upon  
10 it. The original Renewable Fuels Standard was to, of  
11 course, introduce more ethanol into the domestic vehicle  
12 fuel fleet of the United States, and resistance to the  
13 fact that it was 100 percent corn ethanol oriented early  
14 on led to RFS2, I believe, which introduced an element  
15 of "we've got to have some cellulosic ethanol," you  
16 know, we kind of need to almost cap corn ethanol at what  
17 people could argue might be a reasonable level before  
18 you really start mucking up the markets, the farm  
19 community of California thinks the feed market has been  
20 mucked up for a long time, and outside of California,  
21 have been pretty vocal about it's gone too far. But the  
22 promise of certain quantities of cellulosic ethanol was  
23 very meaningful to a lot of us as an absolutely  
24 necessary thing with regard to diversifying from us  
25 Energy people standpoint, the portfolio of ethanol,

1 while -- and secondly, to those of us, but certainly the  
2 ARB, more so, interested in climate change, carbon index  
3 fuels, lower carbon index fuels for the Low Carbon Fuel  
4 Standard, etc., this held out great promise. And as  
5 Steve has indicated, the commitment has not been  
6 forthcoming. The EPA has for three years in a row  
7 basically waived the entire commitment because nothing  
8 is there, and so we are awash in corn derived ethanol,  
9 at least that's the feeling of some of us and this  
10 Commissioner, as this state every year figures out how  
11 much corn derived ethanol we're going to have to absorb  
12 and what we're going to do with it. And, of course, the  
13 staff calculates how much will be blended into our  
14 gasoline supply within our 10 percent maximum volume  
15 criteria and how much ethanol will that use, and then  
16 what's leftover. And then there's a huge slug of  
17 ethanol requirement left over, which the staff here for  
18 several years has just presumed would be used in  
19 flexible fuel vehicles as E85, and just assign all the  
20 rest of that to E85, and we have been incenting E85  
21 fueling infrastructure and domestic manufacturers  
22 continue to make flexible fuel vehicles for which for  
23 decades they've gotten CAFE credits and the breathers of  
24 California get very little credit because very little  
25 E85 is ever used, and frankly we just don't see that

1 market growing very rapidly and -- it's growing, and  
2 it's growing slowly, and this agency is trying to help  
3 it through providing infrastructure for E85 and the  
4 Propels and what have you, and you see them out there,  
5 but it really leaves us with a lot of unspoken for corn  
6 ethanol. Before the Low Carbon Fuel Standard came on  
7 the scene, it just kind of went by the board. But with  
8 the Low Carbon Fuel Standard, they're indicating that in  
9 a few short years, we need a lower carbon index form of  
10 ethanol and it looks like sugarcane ethanol would be  
11 better; since we don't have domestically produced  
12 cellulosic ethanol as promised in the RFS, we go off to  
13 Brazil looking for sugarcane ethanol, and that's a whole  
14 new set of economics under the equation. And this  
15 agency through all has thrown all those questions out on  
16 the table in its draft reports for the Integrated Energy  
17 Policy Report that's due this year, and it's frankly  
18 caused quite a bit of concern and consternation amongst  
19 many agencies, and it's not finished yet. But it is an  
20 issue that folks are going to have to deal with in the  
21 future. Some of us believe more strongly than others  
22 that ethanol shuffling is an economic problem for, if  
23 not the United States, the State of California, which is  
24 going to -- is creating a single market for a scarce  
25 commodity, and prices usually go up when there's a

1 demand that exceeds a simple supply, and that has to be  
2 reckoned with. To me, I am not putting into question  
3 California policies, I think California needs to start  
4 really pressuring the Federal Government to think about  
5 what they've done. But the same token, why am I talking  
6 about this at great length in this forum? It's because  
7 we're talking about what to do with our limited AB 118  
8 monies and how to stimulate the production of  
9 alternative fuels, biofuels, drop-in fuels, and what  
10 have you, that may or may not provide the needs that we  
11 have as a state to reduce our dependence on petroleum,  
12 diversify our petroleum supply, address climate change  
13 through the Low Carbon Fuel Standard and its needs for  
14 low carbon index fuels in the state. So this is all  
15 wrapped together and into, believe it or not, what you  
16 all who are going to be carrying forward the AB 118  
17 Program's Investment Plan have to think about. So  
18 earlier today when I talked about making some dramatic  
19 turns in the road to stimulate other technologies or  
20 things that we need, I think you're going to have to  
21 think about these biofuels, drop-in fuels, and what have  
22 you, in the context of the non-delivery to date of those  
23 cellulosic ethanol fuels that we kind of thought would  
24 be coming to help us, as energy people, to help our  
25 friends down across town with the Low Carbon Fuel

1 Standard. It's not happening and there's an awful lot  
2 of faith and assumptions being made about what the  
3 future might be. So, think about that as you're  
4 formulating the next Investment Plan for the use of the  
5 limited AB 118 funds.

6 MR. MCKINNEY: Yeah, and just to repeat what  
7 I said about staff assumptions, there was no thumb on  
8 the scale here with these charts, we're doing everything  
9 we can to be as transparent as possible with our data  
10 and our assumptions, and again, our Grantees in the  
11 Biofuels arena, the people that think the sky is the  
12 limit, they don't have solid business plans and they  
13 don't get our money. So, again, this information comes  
14 from the Grantees and we're welcome to work with folks  
15 to help them better understand that process.

16 Turning now to Natural Gas Trucks, Estimated  
17 Benefits. So, again, a combination of our ARFVT Program  
18 funding, both through ARRA and in the buy-down program,  
19 at current count we've got 898 trucks that we're  
20 supplying vouchers for. So, again, on the truck side,  
21 almost a million trucks in the state, four percent of  
22 the vehicle fleet, about 16 percent of the total fuel.  
23 Again, as a friendly reminder, this is a bottoms up  
24 approach and I want to thank Andre for his work on this  
25 one. So, on the vehicle side, the low case, so that's

1 basically business as usual through our grants, going  
2 from 15,000 to about 25,000 vehicles and, in the high  
3 case scenario, going from about 15,000 up to 37,000  
4 vehicles by 2020.

5           Petroleum reduction benefits, again, this is  
6 just our Grantee's, the bottom up case, about 120  
7 million gallons on the low case and about 260 or 255  
8 million gallons on the high case. And to go back to the  
9 discussion we had earlier on biogas, because natural gas  
10 is so cheap, we are seeing an increasing number of fleet  
11 operators switch to natural gas and, as that  
12 infrastructure matures and as those fleet operators  
13 become familiar with that fuel type, that creates the  
14 pathway for biogas under that critical market.

15           Turning now to Fuel Cell Vehicles, estimated  
16 benefits, again, we've got about a \$15.7 million  
17 investment to date in infrastructure, our next  
18 solicitation for about \$18 million we hope to release in  
19 January. So when we put together the high/low scenarios  
20 for Fuel Cell Vehicles, for the low case, we used a  
21 scenario based on natural gas vehicle sales and we chose  
22 this because, as with some other fuels, Fuel Cell  
23 Vehicles and hydrogen need alternative infrastructure to  
24 get that into place.

25           The blue line represents the automaker survey



1 so, again, this is a joint survey from ARB and Energy  
2 Commission staff, and that goes from about -- I think  
3 we're between 250 and 300 vehicles in-state right now,  
4 up to over 50,000 in the 2015-2017 timeframe. The green  
5 line represents the high case and this comes from the  
6 Draft Regulation for the Clean Fuels Outlet and I  
7 believe this assumes that all of the ZEV mandate would  
8 be fulfilled by fuel cell vehicles. So that number  
9 looks to be about 122,000, again, by 2020.

10 For Petroleum Displacement, rolling those  
11 numbers up, we're looking at about 10 million gallons on  
12 the low case by 2020, up to about 45 million gallons in  
13 the high case in 2020.

14 Rolling these altogether, total estimated  
15 benefits, these numbers here summarize Table 13 in the  
16 report, that's way too busy a table to have up on the  
17 screen here, I lost my formatting, okay, so by 2020, the  
18 low range, 374.9 million gallons up to a potential high  
19 of almost 1.2 billion gallons.

20 For GHG reductions by 2020, 2.5 million metric  
21 tons at the low range, up to possibly 9.3 million metric  
22 tons at the high end. Let me put that in context for  
23 you. What does this mean in terms of moving towards our  
24 2020 goals through AB 32, 2020 reductions? So on the  
25 GHG Side, so assuming 189.3 million metric tons by 2020,

1 GHG reduction from these projects could represent a one  
2 to four percent reduction from the business as usual  
3 case by 2020. On petroleum reduction, assuming 18.8  
4 billion gallons diesel gasoline in use by 2020, these  
5 fuels and technologies could displace from two to six  
6 percent of the petroleum fuels by 2020. For the  
7 Bioenergy Action Plan, which calls for having 40 percent  
8 of the biofuels consumed in California be produced in  
9 California, or 820 million, these projects could  
10 represent possibly 15-77 percent of this target by 2020.

11 So that is it on the petroleum reduction from  
12 vehicles and fuels. So absent any clarifying questions,  
13 I'm going to move to job creation.

14 MR. SHEARS: Jim, I have some general comments  
15 and stuff, but I'm saving them all for later.

16 MR. MCKINNEY: Yeah, can we save general  
17 comments for after the staff presentation, again, trying  
18 to get clarifying questions for this part. Thanks,  
19 John. So, again, turning to Job Creation Workforce  
20 Benefits, so we have \$15 million invested in the first  
21 two fiscal years of this. We allocate that money  
22 through three main programs, the ETP, Employment  
23 Training Panels, which work very closely with private  
24 industry, EDD, which works more generally, and then some  
25 money to the Community College System for curriculum

1 development.

2           Turning to Work Force Training Delivery Data,  
3 Slide 36, so as you can see, we're just going to report  
4 on the first two, ETP and EDD. So we've got \$5.4  
5 million in ETP, \$3.8 in EDD, totaling \$9.2. So trainees  
6 to be trained as these grants are fully implemented  
7 comes up to be 5,326. The great majority of that is  
8 through ETP and about a thousand is through EDD. And  
9 just for example, and I'm sorry Darci is not here today,  
10 this is not one of my technical strengths, but for  
11 example, as Tesla ramps up production down in the South  
12 Bay, they applied for a grant through ETP and they're  
13 using some cutting edge technologies for the aluminum  
14 bodies, for their battery pack assembly, and the  
15 controller assembly, and we're helping provide training  
16 money for that workforce.

17           Turning to Job Creation, Estimated Benefits.  
18 And, again, this data comes directly from our Grantees.  
19 We asked them, you know, "Based on the money that you  
20 are getting through this program, how many people do you  
21 think it will employ?" And that's direct employment, by  
22 the way. So for short-term, we estimate just over 1,900  
23 jobs, and for long-term, we estimate almost 3,500, so  
24 that would be a total if you were to do the math of  
25 5,394. And I would encourage you to read the chapter in

1 the Benefits Report thoroughly, we've got some very  
2 interesting break-outs by technology sector, the types  
3 of jobs, and again, I apologize to Darci and Pilar for  
4 not doing more justice to this part of our program.

5           Turning to Challenges and Recommendations. As  
6 we discussed at the staff workshop last November, demand  
7 for our public money is very high, given the tight  
8 credit markets and the very large number of people  
9 trying to do this work here in California, so for AB 118  
10 and ARRA, we reviewed well over 300 proposals. It takes  
11 quite a while to review and rank those internally, so we  
12 have what we call a continuous improvement process for  
13 proposal review and grant development. On the  
14 permitting side and CEQA, we require proof of compliance  
15 prior to executing an agreement, and having that  
16 approved at the Business Meeting. And some of the  
17 compliance times for permitting and CEQA can be quite  
18 long, so this is something that we're learning to  
19 integrate into our program and to work fully with our  
20 Grantees so that they understand their obligation  
21 legally before they can win one of our grants.

22           In terms of remedies, one of the key things  
23 that we've been able to get, at least to Assemblyman  
24 Wieckowski, again, kind of looking at some of the  
25 challenges from CEQA, are that Grantees starting next

1 month can expend funds at their own risk from the date  
2 of the Notice of Proposed Awards, so that will be a  
3 change in program policy before us. And Charles Smith  
4 will explain in the second part of this workshop, we can  
5 now present an updated Investment Plan rather than a  
6 full kind of reference material-type plan that we have  
7 now. And, again, on CEQA in the permitting side, where  
8 we're working with our counsel's office to provide very  
9 clear information to our proposers on what their legal  
10 obligations are to qualify for a grant, and then have  
11 that executed according to the timelines. So that  
12 concludes the staff presentation.

13 VICE CHAIR BOYD: Jim, on this slide, before  
14 you close it down, I just want to toss in something  
15 regarding the Wieckowski Bill, I want to take this last  
16 opportunity to thank both members of this Advisory  
17 Committee and, frankly, in particular, CALSTART for the  
18 work they did on the Wieckowski Bill. I kind of kept my  
19 -- well, I kind of kept my hands off this issue, Pat  
20 Perez tried and failed, he got pulled into this quite a  
21 bit, but this piece of legislation is a great help and  
22 it took people who understand this issue and an  
23 Assemblyman, I've gotten to know him reasonably well  
24 since this bill, to push this forward. And this is very  
25 helpful. The CEQA permitting thing, and I am not going

1 to attack CEQA, I've defended it heartily down through  
2 the years, as Tom might remember when we did Clean  
3 Fuels, everybody wanted CEQA to speed up the permitting  
4 and the ARB said, "Hey, we don't think there's anything  
5 wrong with CEQA, we'll step in and help everybody do  
6 their permitting and if there's something wrong with it,  
7 then we'd step up." Well, we didn't change it. I think  
8 that's true now, but I do think there's a terrible  
9 amount of risk averseness that has entered into the  
10 scene and, again, inside and outside of government  
11 agencies, and so even with this streamlining, going to  
12 struggle to move physical projects along through the  
13 CEQA process. And I know the staff here knows what I'm  
14 talking about and will continue to work internally to  
15 knock down some of the legal concerns, or legal  
16 interpretations. But, you know, we hear a lot of  
17 complaints about it outside the agency, "Why aren't you  
18 moving more quickly? This is jobs, jobs, jobs?" I  
19 frankly agree with that 100 percent, but it just has to  
20 work its way along; but, boy, without this piece of  
21 legislation it would be a lot worse than it was. So  
22 just my and our thanks to all who played a role, some of  
23 you recognize, some of you perhaps unrecognized for  
24 strategic reasons, but nonetheless, we appreciate what  
25 was done on this and hopefully it's lessons learned

1 perhaps for some future that may be necessary. So, back  
2 to you, Jim.

3 MR. MCKINNEY: Yeah, thanks, Commissioner  
4 Boyd. So, again, that concludes the staff presentation  
5 and Commissioner, if I might ask you to moderate the  
6 next part of the discussion, what we'd like to do is  
7 open it to comment from the Advisory Committee Members  
8 and then to the general public. Let me see, is there  
9 anybody who has a urgent plane reservation or has to get  
10 back from the public? I don't see any. So if that's  
11 okay with you, Commissioner Boyd, I'll turn the meeting  
12 back over to you?

13 VICE CHAIR BOYD: Yeah, let's have the  
14 Advisory Committee engage in their questions. And John  
15 Shears has been dying to get in here, so John.

16 MR. SHEARS: Not so much dying, but -- well,  
17 maybe dying to express my appreciation --

18 VICE CHAIR BOYD: Your memory can't be like  
19 mine, if you don't get it out right away, it's gone.  
20 But I see a few gray hairs in that --

21 MR. SHEARS: So first, you know, I want to  
22 express again my appreciation to the staff and to Jim  
23 Boyd and to Carla Peterman, Presiding Commissioners,  
24 over this process. And I know the Commission has had a  
25 daunting task during challenging political and resource

1 constraints at times to develop this program, and you  
2 know, I feel that the program has really sort of got  
3 momentum and, you know, a lot of the kinks have been  
4 worked out given that everything, including kitchen  
5 sink, was thrown into this program, and things are  
6 moving along great.

7           So with that, I just have general and specific  
8 comments on the draft. So one of the things I was  
9 wondering about, so I guess I'll start with the Jobs  
10 sort of which to me is also, you know, Economic  
11 Development. I'm just wondering to what extent, I mean,  
12 I understand using a conservative approach in  
13 representing the benefits from the program, but I'm also  
14 wondering whether there's a fairly firm and robust way  
15 to also look at directly connected supply chain jobs  
16 associated with these projects. You know, whether you  
17 could develop some hard numbers, you know, maybe you  
18 could talk to some of the economists that do a lot of  
19 work on this stuff, like David Roland-Holst or Michael  
20 Hanemann at Berkeley, or some of those folks. And then,  
21 you know, what a lot of these types of studies, you  
22 know, they use certain models like IMPLAN or whatever,  
23 you know, "you generate \$7.00 for every dollar, and  
24 seven jobs for every job," etc. etc. I don't know if  
25 you feel comfortable getting into that space, but at



1 least qualitatively it might be good to talk about that  
2 in the report, that it obviously ripples out into the  
3 rest of the economy. And then the other thing I think  
4 is useful to remind California residents and Legislators  
5 and decision makers about is the fact that, through a  
6 program that's developing indigenous portfolio strategy  
7 around Low Carbon Fuels and Alternative Fuels, the  
8 benefits of keeping any dollars spent, not only on the  
9 infrastructure, but also the fuels. That stays resident  
10 within California and gets recycled back in California.  
11 So, you know, a number that recently came up, and I  
12 think it might have even been mentioned today, you know,  
13 like we spend roughly \$65 million a year on fuels in  
14 California and, you know, this was part of the testimony  
15 at the Low Carbon Fuel Standard hearing on Friday, you  
16 know, the number was mentioned \$41 million, it sort of  
17 gets cycled out of this California economy. So, in the  
18 same way, if we're developing indigenous fuels, etc.,  
19 those revenues are staying in-state and working in-  
20 state.

21 And then, you know, I'm not quite sure, I  
22 thought the PEV Regional Readiness Councils are the  
23 2010-2011 disbursements in RFP, or PONs? So I'm just  
24 wondering, too, if it would be good to highlight the  
25 fact that there is like this program that's also helped

1 to leverage a million dollars in DOE funding to  
2 establish, you know, we have the beachheads in the Bay  
3 Area, L.A., San Diego, a smaller beachhead in  
4 Sacramento, but the AB 118 money is working very well  
5 again, you know, in this case to leverage Federal money  
6 for these PEV Readiness Councils, six possibly even more  
7 Readiness Councils, you know, we're working together in  
8 a coordinating fashion throughout the state to build-out  
9 this infrastructure and to support this vehicle  
10 technology. So those are just some of the general  
11 observations.

12           And then I just had some specific things on  
13 the fuels. So I agree with Commissioner Boyd, I still  
14 have some concerns about E85 use and, you know, the  
15 blend wall limit, given that with RFS2, we're looking  
16 more on a fair share basis, California would have to  
17 take more than 10 percent ethanol if it were to be  
18 blended in a refuel tank. I just wanted to check with  
19 Tom, too, on this because from time to time I've raised  
20 it; I know under LEV2 regulations, none of the auto  
21 manufacturers said they would ever build a SULEV FFV,  
22 and going forward with the new LEV3 regulations, they'll  
23 be considered by the CARB Board in January, LEV3 will be  
24 moving the vehicle fleet to SULEV as the performance  
25 standard. So it's hard to know where that will lead the

1 industry in terms of continuing to produce FFVs,  
2 although outside California they're still motivators in  
3 terms of greenhouse gas and CAFE credits, that they can  
4 still earn for a few years out, you know, that  
5 potentially creates a chicken and egg issue, again,  
6 around E85 in California, if we're going to build out  
7 E85 infrastructure, where is the auto industry going to  
8 go with this, and do we need to be doing something else  
9 in California around E85 if, indeed, you know, we need  
10 this for the Low Carbon Fuel Standard and RFS2  
11 compliance. And, Tom, I don't know if you have any  
12 other insights on --

13 MR. CACKETTE: I'll just point out that if  
14 manufacturers can build a SULEV diesel, which they  
15 clearly said they can, then I think they can build a  
16 SULEV FFV. There's no doubt in my mind that it's -- the  
17 big issue is probably \$100, and that's what it's all  
18 about, but clearly they can do it. But do remember that  
19 there are a lot of vehicles out there already with the  
20 capability to use E85 that are not using it because, so  
21 far, the forcing functions like the Low Carbon Fuel  
22 Standard and RFS haven't put enough pressure on the oil  
23 industry to actually, as part of their compliance  
24 strategy, arrange for the E85 to be priced  
25 competitively, then, you know, I think a lot of people

1 that have these cars would use it.

2 MR. SHEARS: Yeah, and I haven't seen a  
3 current survey, but we're probably looking at what,  
4 600,000 or 700,000 FFVs?

5 MR. CACKETTE: Yeah, I think it must be like a  
6 half a million or something.

7 MR. SHEARS: Well, half a million was -- okay,  
8 because I know half a million was a number -- but at  
9 some point, relative to 2020, I know sort of 2017  
10 becomes sort of the window. I agree with Tom, but Tom  
11 is closer to this than I am, so I thought I'd raise it  
12 to --

13 VICE CHAIR BOYD: John, can I jump in on your  
14 question to Tom. Tom, is there an incentive for the  
15 vehicle manufacturers to continue to make FFVs? I mean,  
16 is the CAFE credit incentive going to stand? Or is it  
17 going to wither away? And therefore, what incentive  
18 would they have?

19 MR. CACKETTE: Well, the CAFE credit does go  
20 away, and so on the greenhouse gas side, it's zero in  
21 2016, I think it is, and on the fuel economy side in  
22 2020. So that ends. But there is under the Greenhouse  
23 Gas Standards, there's a credit for vehicles that  
24 actually use lower carbon intensity fuels. So to the  
25 extent that they sell them and either it occurs or the

1 vehicles manufacturers help it occur, that they run on  
2 lower carbon E85, they would be able to get a credit for  
3 that.

4 VICE CHAIR BOYD: Well, the hard part has been  
5 getting people to use the stuff and the fueling  
6 infrastructure is lacking, and the incentive for the oil  
7 industry to put in infrastructure has never been there,  
8 but it's even there less now with them having gotten rid  
9 of 90-95 percent of the infrastructure. So we struggle  
10 along with our tiny little program to incent people like  
11 Propel and what have you to put in a few stations, but  
12 educating the public, educating them on the energy  
13 differences and, thus, what the price difference has to  
14 be, is a fairly tall order.

15 MR. CACKETTE: Well, it's a fairly  
16 straightforward concept for the oil companies if they're  
17 up against the Low Carbon Fuel Standard, that they don't  
18 feel like they can meet, and they're not taking  
19 advantage of E85, then it is simply buy down the price  
20 of the E85 and make it up on the other fuels. It's not  
21 something that's uncommon for them to price fuels for  
22 whatever the market bears, and the market in this case  
23 includes the Standards. So it's not like it's an  
24 impossible scenario, just like it's not an impossible  
25 scenario for them to invest in drop-in fuels and fuel

1 complements that could help lower the carbon intensity  
2 of the fuel. But so far it seems like the whole  
3 strategy is just "let's buy up whatever ethanol we can  
4 with the lowest CI and use that until that runs out."

5 VICE CHAIR BOYD: Is there something within  
6 the Clean Fuels Outlet discussion that's taking place  
7 now, which is oriented strictly towards hydrogen, is  
8 there a component that could include incenting or  
9 discussing E85?

10 MR. CACKETTE: No, it was there before, but  
11 we're actually taking it out because I think the  
12 infrastructure challenges for E85 are really pretty  
13 small. You can add a ethanol tank to many stations, if  
14 you had to actually add one, and it's not a big cost, at  
15 least not compared to natural gas and hydrogen fueling,  
16 where there are half a million to millions of dollars  
17 vs. \$100,000 perhaps, so....

18 VICE CHAIR BOYD: But the incentive has to be  
19 there for the oil industry, which does not own the  
20 service stations to do it, so they're going to have to  
21 see it as being in their best business interest to do it  
22 somehow or another. I guess that's the challenge that  
23 we face.

24 MR. CACKETTE: Well, there are three oil  
25 companies that still own more than, I think, 200

1 stations a piece, it's not like they've completely  
2 walked away from it, but you're right, it's a minority.

3 MR. SHEARS: And there's one refinery, Valero,  
4 that also has a major interest now in ethanol. So,  
5 moving on to EVs --

6 VICE CHAIR BOYD: Stranger things have  
7 happened.

8 MR. SHEARS: Yes, moving on to EVs and with  
9 the timely entry of Eileen Tutt from Cal ETC, who is  
10 also on the Advisory Committee -- I just wanted to -- I  
11 was noting using what in the Benefits Report is called  
12 an Energy Efficiency Ratio, and just clarifying  
13 nomenclature, on the CARB side, they call it the Energy  
14 Economy Ratio, it's essentially the same thing, that for  
15 the EV calculations for gasoline displacement and  
16 petroleum -- sorry, greenhouse gas benefits -- use an ER  
17 of 2.6:1 and I just wanted to note that CARB was using,  
18 until the revisions that were adopted on Friday, an  
19 Energy Economy Ratio of 3, which was raised to 3.4, and  
20 that's all in the ISOR. And then, also, there was a  
21 compliance ramp, and I think the calculations are using  
22 the number for CARBOB, which is the basis fuel that  
23 everything else like ethanol is blended into. So  
24 there's also in the original March 25th, 2009, and also  
25 the October 26th CARB staff reports, they provide the

1 compliance ramp which in the regulations that were  
2 adopted on -- the revised regulations that were adopted  
3 on Friday, the ramp starts at 95.6 for 2011, goes down  
4 next year, and then jumps up again in 2013 because of a  
5 revision around the approach to how the refiners have to  
6 comply and also factoring in the fact that more high  
7 intensity groups have been imported into the state  
8 between 2006 and 2009, so there's an adjustment in the  
9 program there. So the relative benefits have to -- it  
10 will be nice to be consistent with, you know, what CARB  
11 is trying to get the compliance ramp to go. That  
12 effects the greenhouse gases that are generated. So  
13 that -- I would anticipate that that, in fact, would  
14 increase the greenhouse gas benefits with the Energy  
15 Economy ratio going up to 3:1 or 3.4:1.

16 MR. MCKINNEY: And again, John, thanks for  
17 those comments and we were using currently published  
18 information on the ERs to do that.

19 MR. SHEARS: Right --

20 MR. MCKINNEY: It's pretty easy to do a  
21 sensitivity run with the different ER numbers.

22 MR. SHEARS: Right, so -- and then on the Fuel  
23 Cell Vehicle side, so you basically used the kilo of  
24 hydrogen to displace a kilo of gasoline?

25 MR. MCKINNEY: Correct.



1                   MR. SHEARS: And there's another way to come  
2 at it, just for consistency, if you use the same  
3 assumptions for the EVs, 12,000 miles, 22 MPG, that  
4 gives you essentially 545 gallons per year per vehicle,  
5 and then if you look at that for fuel cell vehicles, it  
6 gives you very different numbers than the way you  
7 approach the calculation, and I think it's more  
8 consistent with what you did for EVs, and that's without  
9 even going to the Energy Economy Ratio adjustments,  
10 which worked, was 2.3:1 in the adopted regulations on  
11 Friday, were upwardly revised to 2.5:1, so essentially  
12 what that would mean is, you know, a fuel cell vehicle  
13 -- an average fuel cell vehicle -- would be getting 55  
14 miles per gallon as opposed to 22 miles per gallon. And  
15 U.S. EPA, on their Fueleconomy.gov website has the fuel  
16 economy ratings for both the Honda Clarity and the  
17 Mercedes Benz Fuel Cell Vehicles, so the Clarity is  
18 rated at 60 MPG and the Mercedes Benz F Cell is rated at  
19 52 MPG, those are the only two commercially available  
20 fuel cell vehicles and, as a result, the only two that  
21 have fuel economy ratings. But that also jives with the  
22 55 MPG. So, in fact, one kilo of hydrogen is displacing  
23 at least two gallons, maybe more than two gallons, if  
24 you go with the full multiplier of gasoline. So, again,  
25 you know, depending on how you go about it, you should

1 get more petroleum displacement effect and a more  
2 greenhouse gas displacement on the fuel cell side.

3 MR. MCKINNEY: And then, John, if I can  
4 interrupt you, while we're talking about fuel cell  
5 vehicles, I misspoke during my presentation, so the low  
6 case here is actually based on the draft Clean Fuels  
7 Outlet Regulations, so, Tom, I think you were trying to  
8 catch my eye on that one, so excuse me for misspeaking  
9 on that one.

10 MR. SHEARS: So those were just my general and  
11 specific comments for now and, you know, just based on a  
12 quick scan of the report over the weekend. So, thanks.

13 VICE CHAIR BOYD: Thank you, John. Other  
14 Advisory Committee members around the table? Any  
15 comments? Tim.

16 MR. CARMICHAEL: Eileen, do you want to go  
17 first?

18 VICE CHAIR BOYD: Careful, Eileen, you'll hurt  
19 yourself on that thing. It's --

20 MS. TUTT: No, please, I'll go after you.

21 VICE CHAIR BOYD: It's not paper.

22 MR. CARMICHAEL: Just a point that -- and  
23 Bonnie may elaborate, where do you go with this report  
24 beyond today? Let me start with that. Who else do you  
25 need to present it to? Is it going to the Legislature?

1 Key staffers? Are there going to be other briefings?

2 MR. PEREZ: Next steps basically are to take  
3 the input, refine the Staff Draft Report. As required  
4 in law, we do not have to report back to the Legislature  
5 in a report, however, under the Integrated Energy Policy  
6 Report, we are required to report back on the findings  
7 through that report to the Legislature and Governor. So  
8 this simply is -- I like to refer to it as a Technical  
9 Appendix in support of the Integrated Energy Policy  
10 Report that will be out, I believe the final in February  
11 or March, I'll turn that back to Commissioner Boyd on  
12 that, I'm not sure what the timetable is.

13 MR. CARMICHAEL: So a couple of points on  
14 context that I think could be helpful in presenting this  
15 to people that don't track these issues all the time.  
16 For a lot of people, \$360 million is a lot of money and  
17 you look at the last couple of slides in the summary of  
18 what the benefits of anything, wow, you only are going  
19 to make a one percent, or a nine percent impact and you  
20 spent \$360 million. What isn't captured by the slides  
21 is how much money, for example, does California spend  
22 each year on new vehicles, how much do we spend on fuels  
23 in general, in transportation and fuels, in general?  
24 Those are obviously much bigger numbers. And I think it  
25 helps put \$360 million spent over a few years in context

1 for those that don't look at these numbers all the time.  
2 And the last thing that any of us in this room want is  
3 somebody to read this and say, "Look how much money that  
4 damn Energy Commission spent, and look how little they  
5 got for it." "Damn" was added for emphasis.

6 VICE CHAIR BOYD: Don't worry, we're used to  
7 hearing it.

8 MR. CARMICHAEL: So that's one point. And  
9 then the other is, I think it's also worth noting that  
10 I, for one, and I assume others, don't expect the  
11 benefits to be linear as more money is spent, and let me  
12 explain that a little bit more. I mean, a number of us  
13 in this room are already starting to strategize, "How do  
14 we get more money for this program when it sunsets  
15 and/or how do we get more money for similar programs as  
16 they all sunset in the next three, four or five years?"  
17 And one of the things that doesn't jump out from this  
18 presentation is, a lot of the money that has been spent  
19 in the last few years were for, in some cases, the first  
20 of its kind when it came to infrastructure, or certainly  
21 the first 10 of its kind. You know, very early in the  
22 development of a new approach to developing -- you know,  
23 creating a fuel or distributing a fuel. In some cases a  
24 new application for a transportation technology that  
25 already exists. But it's not like going to Ford and

1 saying, "You've already made a million of these  
2 vehicles, we're going to incentivize you making the next  
3 million." That's not what we're talking about here.  
4 And it's helpful to have that reminder, again, when  
5 you're talking about the benefits of this pot of  
6 funding, to remind people, "Recognize that a chunk of it  
7 went to technology development," or -- yeah, technology  
8 development is probably a good way to phrase it, but  
9 there may be a better -- in addition to getting fuel out  
10 there, in addition to getting cleaner vehicles out  
11 there. And so my expectation over time is, when we  
12 spend the next hundred million, or the hundred million  
13 after that, is we're actually going to get more benefit  
14 for that money because probably going to be spending  
15 less on that first off -- you know, first of its kind --  
16 and I hesitated a bit because maybe it's not in the next  
17 year or two, but over time we're going to be spending  
18 less on that first of its kind, I think, and more to  
19 assist in getting the fuel out and the vehicles out.  
20 And so I think greater than a linear projected benefit.  
21 Thanks.

22 VICE CHAIR BOYD: I appreciate those comments,  
23 Tim. And it focused in on a concern that I certainly  
24 have about the future use of this report and the need to  
25 be conscious of -- I have to choose my words carefully

1 here -- be conscious of the marketing nature of a report  
2 like this, and thus the need to make sure you capture  
3 all the points as you indicated because certain  
4 audiences will be looking for the worst, not the best.  
5 And therefore, the report needs to have all the  
6 ramifications and implications of these type of  
7 investments and we need to put an honest but total spin  
8 on what the words are, so point very well made and a  
9 point the Advisory Committee will have to help the  
10 Commission within the future, and a point the staff will  
11 have to struggle within the narrow amount of time left  
12 to make this a standalone appendix that will be used by  
13 many people to the Integrated Energy Policy Report,  
14 which is proposed to be acted upon in January some time,  
15 as long as there's a quorum of three left in January,  
16 which there will be, so, in any event, point very well  
17 made and very well taken hopefully by everyone at the  
18 CEC.

19 MS. TUTT: So such one comment, Commissioner  
20 or --

21 VICE CHAIR BOYD: Yes, Eileen.

22 MS. TUTT: -- Vice Chair. I guess another  
23 point of context, it might be worthwhile putting in some  
24 of the costs associated with the dependence on petroleum  
25 and how much relative to the costs of, you know, the

1 benefits of this report and the costs of AB 118. And I  
2 like the idea of context because we forget in our little  
3 circle that this goes out and gets used in ways that we  
4 may not appreciate. I appreciate also the number, the  
5 vehicle estimates that are in the report. I hope that  
6 they do translate to the IEPR report because the IEPR  
7 numbers, I think, were not reflective of this assessment  
8 and I think this assessment more accurately represents  
9 the anticipated number of electric vehicles -- I should  
10 say battery electric vehicles is what I mostly focused  
11 on. And then, in terms of the ER, you know, I heard  
12 Jim, I think you said that you would put the 3.4 in  
13 context, or you would have some sensitivity analysis, I  
14 guess I would prefer that the number were just 3.4.  
15 That number went through a lot of revisions and we had a  
16 lot of dialogue around it, and it's not like it might be  
17 3.4 and it might be 3.2, an ER right now, the best  
18 estimate we have is 3.4 and so I would like to see -- I  
19 would prefer that number be used than some sort of  
20 sensitivity analysis. Thank you.

21 VICE CHAIR BOYD: Thank you, Eileen. Yes,  
22 Brian.

23 MR. MCMAHON: I had a point on the jobs  
24 projection.

25 VICE CHAIR BOYD: I was hoping you would.

1           MR. MCMAHON: It appears that the jobs listed  
2 are those jobs that were related to the training  
3 program, the direct investment through ETP and EDD. I  
4 also raised the point that the other investment most  
5 likely has some jobs impact, as well, those companies  
6 may not have made their way to one of the training  
7 programs, but I would have to assume that investment  
8 that puts companies on a growth ramp also has some jobs  
9 impact, and whether that impact is being somewhat  
10 understated, if we're only looking at the employers that  
11 receive some direct training benefits.

12           VICE CHAIR BOYD: I think that's a good point.  
13 I think some of us feel the recipients in responding to  
14 the questionnaire were either incredibly conservative,  
15 or really didn't take into account anything other than  
16 the money they got, as you say, for training, and didn't  
17 do as many economists might do, is kind of extrapolate  
18 out and even gather up the other investments -- direct  
19 investments -- that they received, and what they would  
20 mean in the term of jobs. So I think the staff is  
21 recognizing that, struggling with that point, and I'm  
22 not quite sure what they're going to be able to do with  
23 it, but we recognize this is something, to build on what  
24 Tim said, this is something people are looking for and  
25 also something people will beat you up over if you



1   overstate the benefits, so I think we lost an entire  
2   state agency a few years back over the potential  
3   overstating of jobs. We used to have a Trade and  
4   Commerce Agency, I believe they're toast, or history,  
5   forgotten history by now. In any event --

6               MR. MCMAHON: And I would just point out that,  
7   at least in terms of the ETP investment, every trainee  
8   that participates or receives training benefits is  
9   tracked in our database, so when the company initially  
10  comes in, they give us an estimate as to what they think  
11  they're going to hire, or the employees they think  
12  they're going to re-train, but ultimately that is  
13  measured against specific entries, trainee by trainee,  
14  and the hours, and then retention at the end of the  
15  training period. So the end result is being reported at  
16  least through our partnership, is very firm ultimately.

17              VICE CHAIR BOYD: And I would suggest to the  
18  staff those very words find their way into our writings  
19  about how the process will work, and while -- to point  
20  out that there is an audit mechanism, if I can use those  
21  crude words, these are just not pie in the sky numbers  
22  that will be forgotten, but there are systems in place  
23  to follow and verify, which I think many people are  
24  interested in these days. Other folks -- did you get  
25  everything, Brian? I didn't mean to cut you off. Any

1 other comments at the table? Bonnie.

2 MS. HOLMES-GEN: Thank you. And I also want  
3 to thank the staff for the tremendous amount of work and  
4 thank Commissioner Boyd for his leadership and vision in  
5 this process, and it's really -- it's hard to believe  
6 that this process is going to go on without you, Jim,  
7 being here at this Committee.

8 VICE CHAIR BOYD: I've been in search of the  
9 fountain of youth for years --

10 MS. HOLMES-GEN: It's just hard to imagine it  
11 going forward without him, but -- and you do look  
12 amazingly youthful, I have to say -- tell us your  
13 secrets.

14 VICE CHAIR BOYD: Well, maybe I need to keep  
15 working.

16 MS. HOLMES-GEN: But I also have been thinking  
17 about this report and the framing of bringing this into  
18 the legislative context, it's hard not to think about it  
19 in that way, and reporting on, okay, we're kind of half-  
20 way through the program, and here are the successes.  
21 And there are an incredible number of successes in this  
22 report and it seems to me that there probably could be a  
23 little more work and framing done to try and bring those  
24 out, or bring them -- maybe to look a little more -- a  
25 little larger, more significant, longstanding than some

1 of the numbers that are in here. And I was whispering  
2 to Tim about this earlier, and I agree with his  
3 comments, but these investments are so critical to the  
4 AB 32 program, to the Low Carbon Fuel Standard, as we  
5 discussed, to the Zero Emission Vehicle Program, to this  
6 turnover that we are anticipating in our vehicle fleet,  
7 and I'm just wondering if we could brainstorm or think  
8 about some ways to reflect that a little more fully  
9 beyond the one to four percent reduction in GHGs. And  
10 I've been sitting pondering this and still trying to  
11 think about how to best do that. Maybe one way would be  
12 to specifically in some of these charts, I know it's  
13 mentioned in the report, but specifically lay out some  
14 of the specific AB 32 regulations like the Low Carbon  
15 Fuel Standard and somehow try to capture the importance  
16 of these investments to moving forward in those  
17 regulations, to spur and incentivize the investment  
18 that's going to help to achieve early compliance and  
19 move those regulations forward. So I will continue to  
20 think about that, but I don't know if maybe Tom has any  
21 thoughts from ARB. But really, these incentives do work  
22 hand in hand and are such an important piece to moving  
23 forward with the whole agenda, regulatory, at the ARB,  
24 you know, all of it. It's just such an important piece  
25 and I'm just not sure that we fully reflected the

1 importance with the numbers that we have here, so I'm  
2 struggling with how to add some additional numbers in.  
3 And one of the things that I mentioned earlier, I think  
4 it would be very helpful, especially in the legislative  
5 context, is to include a little more specific  
6 information in the report about businesses that  
7 specifically have begun or accelerated or expanded  
8 operations in California specifically because of these  
9 investments. I think that kind of information is  
10 incredibly helpful and convincing to Legislators and  
11 helps to really hammer home the value of this kind of  
12 program. So I do think that -- you said you have some  
13 of that information, and I think bringing that into some  
14 of the charts and the Executive Summary could be very  
15 helpful. So I appreciate the tremendous amount of work  
16 that's been done, and I think it's very impressive, and  
17 proves many times over the value of this program. But I  
18 do want to make sure that, for those people who are  
19 looking at this and scouring what's been accomplished  
20 and how valuable is it really, that we give the fullest  
21 -- the best and fullest account of the benefits of this  
22 program, including the short-term goals, what we're  
23 doing to reach our 2020 goals, and also what this  
24 program is doing to put us on the road to 2050.

25 VICE CHAIR BOYD: We've all had very good

1 recommendations. You're all invited, repeatedly today,  
2 to critique and give us any input on any of the  
3 statistics or data, and we welcome your eloquent prose  
4 in helping to display that data in any way you want to  
5 offer, I just want to make that point, that these are  
6 all good points and we would, you know, if you can even  
7 help us flesh them out as Bonnie solicited others here  
8 for any ideas that they might have, we would appreciate  
9 it. We do have Advisory Committee members on the phone.  
10 I want to make sure that they get recognized. I have no  
11 way here to know if you have your hand up, so to speak,  
12 so are there any advisory committee members who are out  
13 there on the phone, or what have you, who have a comment  
14 or two they'd like to make here? Then I'll turn it over  
15 to our public to have some comments if they'd like. Any  
16 Advisory Committee members like to make comment on the  
17 phone?

18 MS. BAKER-BRANSTETTER: This is Shannon Baker-  
19 Branstetter. Can you hear me?

20 VICE CHAIR BOYD: Yes. Go ahead, Shannon.

21 MS. BAKER-BRANSTETTER: Great. I actually  
22 don't have any comments (inaudible).

23 VICE CHAIR BOYD: Thank you. Appreciate that,  
24 the electronics were a little unclear here, but I think  
25 we got your positive comments, and appreciate you

1 hanging in there and staying with us. Okay, if the  
2 Advisory Committee -- Tim? Okay, then I guess I'd like  
3 to open it up to any members of the public here who  
4 might have a contribution. I saw Mr. Boesel's hand go  
5 up immediately and if there are others. All right,  
6 well, John, since I mentioned you, and then there's Bob  
7 Davis in the audience who actually went to the trouble  
8 of filling out a blue card, which we much appreciate, so  
9 he'll be second. But, John, you caught my eye as the  
10 only hand stabbed into the sky immediately. Then Mr.  
11 Davis and anyone else here, and then I'll turn to the  
12 phone, as well.

13 MR. BOESEL: Members of the Advisory Committee  
14 and Commissioner Boyd, thank you for this opportunity.  
15 I am John Boesel, President and CEO of CALSTART. I just  
16 want to say that I think this report is a really a great  
17 first cut at documenting the successes of this very  
18 important program. When we helped support the passage  
19 of AB 118, we believe that California had the strictest  
20 and toughest policies in the nation, bar none, to  
21 promote cleaner, lower carbon vehicles and fuels. But  
22 unless those vehicles are getting out there, and the  
23 fuels are getting out there, and the rubber is meeting  
24 the road, then those policies won't matter much. And  
25 118 is that lubricant to help grease the wheels and make

1 things happen. And I think it's really doing a great  
2 job and I think this is a very good first cut at laying  
3 out the benefits of the program to date. And I think  
4 there's a lot more to come.

5 I think the leverage ratio is really  
6 impressive, 1.2:1, and that's something that really  
7 should be highlighted. It shows that others are  
8 interested in this space, that you're making wise  
9 investments, gathering other public investment and  
10 private investment, which is really important. And I  
11 think, as the result of this program, we can say that  
12 this state, more than any other state in the nation,  
13 that we have more electric vehicle chargers, plug-in  
14 electric passenger cars, electric trucks, hybrid trucks,  
15 natural gas trucks, and biomethane production than any  
16 other state by an order of magnitude. Now, a lot of  
17 that is policy driven, but these investments are helping  
18 those things happen and bringing them to the fore.

19 I thought Tom Cackette's point that we really  
20 don't have a 2050 pathway for heavy-duty vehicles in  
21 today's meeting was really important and I think this  
22 program has made some good investments to date in  
23 helping to develop the technologies that will make that  
24 kind of pathway possible, and I also think the CARB  
25 AQUIP program has also helped to support that, as well,

1 and that's something we should continue to look at going  
2 forward. I would support many of the comments that John  
3 Shears made about showing the economic and jobs benefit  
4 of this, showing a job multiplier as a result of direct  
5 jobs is not something you should be fearful of doing,  
6 it's a standard econometric practice. I certainly know  
7 that WSPA, when they talked about their benefits to the  
8 state, frequently mentioned the economic multiplier  
9 benefits of all the jobs that they create.

10 And I also believe that there are many other  
11 successes beyond just the vehicles deployed, some  
12 projects that this program has funded ought to be  
13 highlighted, as well. For instance, one of the barriers  
14 to the use of hydrogen is the ability to measure  
15 hydrogen and to charge for hydrogen. I believe  
16 investment has been made in that, hopefully that issue  
17 has been taken care of and that's something that should  
18 be addressed.

19 I want to thank Peter Ward who is retiring and  
20 for all of his good work at the Commission on behalf of  
21 this program, and really getting it off to a great  
22 start.

23 And I really want to thank Commissioner Boyd.  
24 It's sad to think this is his last meeting, but for all  
25 his leadership, he's really played an instrumental role



1 and key to the program's success and I really hope that  
2 current or future Commissioners will carry the torch and  
3 provide a similar level of excellent leadership. Thank  
4 you.

5 VICE CHAIR BOYD: Thank you, John. I think  
6 your recommendations are right on point and I would just  
7 say to the staff, I agree with John in terms of putting  
8 all those positive comments in a report like this, that  
9 is so important for selfishly and candidly saying  
10 marketing the program, or keeping it going forward. And  
11 of course, I will invite John and all Advisory Committee  
12 members and anyone else so inclined to appear at the  
13 legislative hearings that are unlikely going to take  
14 place some time when these kinds of assertions are  
15 challenged, to back up the bureaucrats who have  
16 allegedly made those assertions with actual factual real  
17 life stories that only you can relate. So, thank you.  
18 Mr. Davis. Bob Davis, are you in the room? Yes, there  
19 you are.

20 MR. DAVIS: Commissioner Boyd and Committee  
21 members, my name is Bob Davis, I'm a retired Military  
22 Pilot living in Red Bluff, California. First, I'd like  
23 to thank the California Energy Commission again for  
24 funding the research at Humboldt State University on the  
25 PEM Electrolyzer. The Study Group concluded that a home

1 hydrogen refueling station powered by wind turbines  
2 could produce adequate electricity to run a PEM  
3 electrolyzer that would deliver hydrogen at 2000 PSI for  
4 use in the family cars. I followed the Humboldt  
5 recommendation and installed two wind turbines that  
6 provide electricity. When my PEM electrolyzer is  
7 commissioned in February, I will have the most advanced  
8 home hydrogen refueling station in the world.

9           The infrastructure is what I'm most interested  
10 in, and it was referred to before that we need more  
11 demand for building that infrastructure. It's slowly  
12 expanding. My recommendation is to hurry the expansion  
13 by putting all fuel cars and trucks in the hands of the  
14 public. At the present time, government entities can  
15 buy them, but the public cannot. I own an all-fuel car,  
16 I bought it surplus from the State of California, it's  
17 called bi-fuel because it has two fuel systems, one for  
18 liquids and one for non-liquid fuels. The car will run  
19 on and usually runs on gasoline and compressed natural  
20 gas. Mine will also run on Hythane. The bi-fuel cars  
21 of the future will run equally as well, burning Hythane,  
22 Hydrogen, Propane and other fuels when the newer engines  
23 compensate for fuel density and burning characteristics.

24           I saw one of these newer cars in Redding last  
25 weekend. It has four valves per cylinder, dual

1 injection, turbo charger, intercooler, a larger  
2 computer, and variable valve timing. The alternate  
3 energy infrastructure will grow faster when these all-  
4 fuel cars and trucks are placed in the hands of the  
5 public. We have compressed natural gas, the dealers  
6 have trouble selling them because, if the compressed  
7 natural gas side breaks down, then the owner has no way  
8 of getting it to a dealer who will work on the  
9 compressed natural gas side, or the gaseous side. I  
10 have to drive 150 miles to have that work done.  
11 Truckers occasionally get contracts to do hauling  
12 outside an area that has the alternate fuel, they need  
13 to use that truck, not buy another truck that burns  
14 gasoline. So we need all fuel vehicles, cars and  
15 trucks.

16 VICE CHAIR BOYD: Thank you, Mr. Davis. I now  
17 recognize you've been here before and I appreciate you  
18 coming down from that area. You make some good points,  
19 I think. At the L.A. Auto Show I saw one or two  
20 manufacturers that introduced, again, bi-fuel cars,  
21 maybe some of what you're hoping for will be occurring,  
22 and I just want to point out to the staff that Mr.  
23 Davis' testimony reminds me of an internal discussion  
24 we've been having for far too long about the value of  
25 very small projects, very small grant-type programs, and

1 what have you, that can perhaps bring technology to the  
2 fore. I congratulate him on perhaps having the world's  
3 most advanced home hydrogen refueling system and  
4 probably deserves a little notoriety better than the  
5 Redding newspaper can maybe accommodate, but in any  
6 event, thank you for being here. Anyone else in the  
7 room? Yes, there's a hand over here, then I have at  
8 least one card from somebody on the phone.

9 MR. GONG: Thank you, Commissioner. My name  
10 is Terry Gong. This is the first time I've ever  
11 attended a meeting from the California Energy Board.  
12 I'd like to thank Steve Kaffka, I just saw him at a  
13 meeting, the Alfalfa Forage Conference, there was a  
14 biofuel section which he made some really good  
15 presentations, and he told me, "Hey, you ought to come  
16 up here." And so I'm here. Thank you, Steve.

17 I just want to make a couple comments. First,  
18 my name is Terry Gong and our company is -- there's two  
19 -- Harmon Systems International and Earth Renaissance  
20 Technologies. I just want to make a couple comments  
21 that I think might help the Board because we want to  
22 give a diversity of opinions. I'd like to provide some  
23 out of the box thinking. From a public relations and  
24 marketing perspective, I think when we think about it,  
25 the Flex and atmospheric carbon isn't really about

1 convincing people whether it's natural or anthropogenic.  
2 It's really about trying to achieve optimal efficiency.  
3 I think that's really what we need to convey to the  
4 general public because efficiency is our additional  
5 source of fuel. And to do that, we need to bundle a lot  
6 of the processes that we do, whether it's reverse  
7 osmosis, or wastewater treatment, or biofuel productions  
8 in farmland. We need to learn how to bundle and utilize  
9 the components. I like to say it's like going to a  
10 Chinese restaurant where there's a Lazy Susan right in  
11 the middle of the table, what we want sometimes from an  
12 industry standpoint, what we want is not always in front  
13 of us, it's on the other side. And what another  
14 industry creates in byproducts as waste is also not what  
15 they want, but it's what we want. So if we can just  
16 adjust that Lazy Susan, many times we can create that  
17 bundling and create that efficiency that will help us.

18 I wrote successfully a petition to the USDA  
19 for the use of elemental sulfur for the on-site  
20 production of SO<sub>2</sub> sulfurous acid for organic crop  
21 production. And this method has been used to achieve  
22 optimal agronomic conditions in both soil and treat the  
23 right plant physiology situation where they can grow  
24 optimally, preservation and also the ability to take  
25 marginal soils to create biofuel production. I think

1 that was one of the things I took from Steve's  
2 presentation last week, is that people don't think that  
3 we have the capability to grow biofuels out here in the  
4 west, well, I think we can.

5           The other thing I wanted to say is, regardless  
6 of whether the energy source is going to be derived from  
7 biofuels, algae, cellulosic, electricity fuel cells,  
8 whatever, it's all going to rely on water and the  
9 control of the PH of water because, for example, we know  
10 that reverse osmosis membranes plug up, and if the PH is  
11 wrong, it will plug up and it creates a lot of energy  
12 use. Same thing with pumping water, we're pushing it,  
13 pumping it, trying to move it somewhere, and it consumes  
14 a heck of a lot of our energy here in the state. So I'd  
15 like to point out that PH control is so critical.

16           Now, the other part is wastewater treatment.  
17 We know that we are creating stressing effects to  
18 ecosystem in the Delta, Delta Smelt and so forth. And a  
19 lot of these wastewater treatment facilities were never  
20 designed to remove pharmacological products that are now  
21 showing up in our wastewater. And so what our company  
22 has done is we have devised a new alternative method to  
23 treat municipal wastewater, particularly not just to  
24 remove those elements, but also to create -- and I  
25 stress -- create a new class of recycled water that

1 could actually be land applied and improve the soil that  
2 it's applied upon, which basically has been unheard of.

3           Lastly, you know, we use sulfur because this  
4 is what nature does, we have followed and emulated what  
5 nature is doing with volcanisms throughout the world.  
6 And the SO<sub>2</sub> that goes up in the atmosphere helps  
7 coalesce the rain. And you know, I go back to that  
8 event where the Cosco Busan had collided with the Bay  
9 Bridge and I heard Senator Pelosi make a statement that,  
10 you know, the bunker field was really bad because it  
11 contained sulfur in it. Well, yes, I'm not an adequate  
12 for any pollution or any escape of it, but we need to  
13 recognize that there are some parts of these basic  
14 elements that really serve a purpose on this earth.  
15 There's a reason for it and we need to understand that.  
16 And from our company and my standpoint is, we see that  
17 sulfur is a part so integral to the natural process, and  
18 this is how nature controls the PH of this earth. So I  
19 just want to say that we need to be mindful that 100  
20 percent of the world's sulfur on the worldwide market  
21 today is actually derived from oil refineries, what is  
22 going to happen to us if everyone recognizes the  
23 importance of this valuable basic element, sulfur? It  
24 will drive -- the demand is going to drive the price as  
25 we start to try to do everything we can to control PH.

1 So I just throw that out to you and I just want to say  
2 that I hope that I can make a contribution to our state  
3 and humanity in this endeavor. Thank you.

4 VICE CHAIR BOYD: Well, thank you for being  
5 here and thanks, Steve, for recruiting you. I spent a  
6 fair portion of my career in water, and I believe -- I  
7 certainly agree water is gold in California and things  
8 will have to revolve around it. I'm encouraged to hear,  
9 I mean, when we started this advisory committee, the  
10 thought of energy crops was anathema to some people  
11 sitting around this table, and over time we've learned  
12 that you can have energy crops that do not interfere  
13 with the food supply, you can perhaps have energy crops  
14 that even rehabilitate land that has been ruined in  
15 other ways, and now you tell me there's a way to have  
16 water that helps in that process, so that's very  
17 intriguing and, if you follow us more closely, you'll  
18 see we're trying to capture energy from wastewater  
19 treatment facilities and a lot of the other arenas you  
20 mentioned. So I invite you to stay tuned in and keep in  
21 touch with Steve, who can keep you advised of what he  
22 and we are trying to do. All right, thank you very  
23 much. Anyone else in the room want to say something?  
24 Seeing no hands, we have at least one person on the  
25 phone. Oh, I'm sorry, I didn't see out of the side of



1 my eye there. Go ahead, Bonnie.

2 MS. HOLMES-GEN: Thanks. I just wanted to add  
3 one more comment. I don't know that this includes a  
4 summary of the percentages of funding that were  
5 recommended by the Advisory Committee for each of the  
6 fuel types and then the actual percentage that was  
7 spent, that's something we've talked about over the past  
8 advisory committee meetings, but I think that would be  
9 very helpful to show over the two years that this covers  
10 how the actual expenditures match up to the Investment  
11 Committee recommendations that were made. I think that  
12 would be very helpful.

13 VICE CHAIR BOYD: Yeah, I think you'll find  
14 that it was pretty consistent, but I agree it needs to  
15 be done. Thank you. All right, is Tyson Echerle on the  
16 phone?

17 MR. ECHERLE: Yeah, great. Thank you very  
18 much. This is Tyson Echerle with Energy Independence  
19 Now, and I agree with the majority of all the comments  
20 that have been made so far. I want to thank staff for  
21 an excellent job. I think it's critical to frame this  
22 program in a positive light and show the benefits, and  
23 to Tim Carmichael's point, I think it is really  
24 beneficial to add in some context as far as what's being  
25 spent, you know, in relation to the \$374 million as far

1 as on the greater fuels market, I think that's an  
2 important distinction to make, so when this report goes  
3 out to a broader audience, I think kind of drilling down  
4 on the details, it's fun to echo what John Shears said,  
5 the thing that jumped out at me, I've been paying more  
6 attention to the hydrogen side, and as far as the  
7 gasoline gallons displaced, the Energy Efficiency Ratio,  
8 you know, of 2.3 or 2.5, I think can be applied to  
9 increase the amount and show more realistically how many  
10 gallons of gasoline are being displaced. So the numbers  
11 that you have in the report are, you know, from 11  
12 million to 45 million in 2020 and if you add in the  
13 energy efficiency ratio, I get more of 25 million to 104  
14 million, give or take, gallons of gasoline displaced.  
15 So just another way to kind of be realistic and not so  
16 conservative. And that's all I wanted to add. Thank  
17 you.

18 VICE CHAIR BOYD: Thank you for your comments.  
19 Is there anyone else out there listening in in the  
20 public arena who would like to make a comment? Are we  
21 showing anybody? Apparently, we are not. So we heard  
22 from everybody in the audience. Anyone around the table  
23 like to say anything else before I adjourn this meeting  
24 virtually on time? Oh, my gosh. All right, sorry about  
25 that, Charles. So we're behind schedule, not ahead of

1 schedule.

2 MR. CARMICHAEL: This is Tim Carmichael,  
3 Commissioner Boyd, I was thinking about you and Peter  
4 Ward when this came to mind; what I'm starting to  
5 appreciate about memory is, as you get older, you have  
6 that many more things to remember, and so when anybody  
7 thinks, "Oh, God, I can never remember that," it's  
8 because I've just been on the planet that many more  
9 years and I've got that many more things to remember  
10 than the younger folk.

11 VICE CHAIR BOYD: That's a very good excuse.  
12 I'll use it. Actually, I've used it a lot. I say it's  
13 up there, it's just the tape is so full, it goes by so  
14 slow, it takes a while to get to it. So old folks like  
15 me, and now Peter, you're an old folk, too, we'll  
16 remember that advice. Charles, my apologies.

17 MR. SMITH: Thank you, Commissioner Boyd. I  
18 thought about not correcting you, but the purpose of  
19 this presentation is just to give everyone a brief idea  
20 of where we are and where we are headed with the Fiscal  
21 Year 2012-2013 Investment Plan.

22 This slide is probably familiar to plenty of  
23 people who have been previous Advisory Committee Meeting  
24 hearings, but for those who are new to the process, the  
25 Energy Commission is required to develop and adopt an

1 Investment Plan every year. The Investment Plan  
2 determines the priorities and opportunities for the  
3 ARFVT Program, so that's not to say that it picks  
4 specific projects that it will fund, merely to say that  
5 it will provide funding allocations for general  
6 activities. As mentioned, the Investment Plan gets  
7 revised each year and the Energy Commission has an  
8 Advisory Committee such as yourselves that we work with  
9 to develop the Investment Plan.

10 For the 2012-2013 Investment Plan, we need to  
11 have a draft posted concurrent with the submittal of the  
12 Governor's Budget, which as I understand it, is January  
13 10th, so coming up quickly. And then our final version  
14 must be adopted here at a Commission Business Meeting  
15 before, or concurrent with, the Governor's May Revise in  
16 2012. This is also the first time that we'll be  
17 preparing an Investment Plan update. We were granted a  
18 bit of a reprieve from AB 1314, Assembly Member  
19 Wieckowski.

20 As an update, this '12-'13 Investment Plan  
21 will rely on the more comprehensive analyses that were  
22 included in previous Investment Plans. Some of you  
23 might recall we had a section on feedstocks that went on  
24 for 25 to 30 pages. We'll be relying on rather than  
25 revisiting that analysis for this Investment Plan

1 update. So we can all look forward to a shorter, more  
2 concise allocation of funding for Fiscal Year 2012-2013.  
3 The Advisory Committee will be reconvened for the  
4 development of the 2012-2013 Investment Plan. This is  
5 not technically the first meeting of the 2012-2013  
6 Investment Plan. In short order, we're going to be  
7 soliciting applications for new members of the 2012-2013  
8 Investment Plan, and following up with all of you to  
9 make sure you're still interested in serving with us.

10 The first official meeting of the 2012-2013  
11 Investment Plan we hope to hold in January, shortly  
12 after the release of the first draft, and then that will  
13 be one of at least two meetings that we will conduct  
14 before the Investment Plan is adopted in May.

15 Also, we have a public Docket that is now open  
16 for comment, as it has been in previous years. To  
17 submit a comment to the Docket, what you need to do is  
18 send an electronic copy of a letter, a short report,  
19 whatever it may be, to our Docket Office's email  
20 address, and then also send a hard copy to our Dockets  
21 Office. And instructions on how to do both of these are  
22 available at the website listed below.

23 For Fiscal Year 2012-2013, Investment Plan,  
24 like I mentioned, we're going to be relying quite a bit  
25 on the analyses and summaries from previous investment

1 plans, but we are also very interested in incorporating  
2 new ideas and considerations.

3           These are just some of the new concepts that  
4 have been brought to our attention since the adoption of  
5 the last Investment Plan so long long ago, last  
6 September, I suppose. So the first would be programs to  
7 match biofuel supply with biofuel demand. This has been  
8 brought to our attention in part by the E2 Group. We  
9 are looking at integrated centers that will focus on  
10 expanded alternative fuel offerings in advance  
11 technology vehicles. We are looking at ways that we can  
12 emphasize economic development and manufacturing in  
13 rough economic times, will continue to be rough economic  
14 times. We're also looking at how we can sustain  
15 incentive funding for expanding numbers of alternative  
16 fuel vehicles. This is true in a number of cases, we  
17 have our own rebate incentive program for natural gas  
18 and propane vehicles, and additionally the Air Resources  
19 Board provides funding for light-duty, electric, and  
20 plug-in hybrid electric vehicles, both fuel cell  
21 vehicles, as well as hybrid and electric trucks. We'd  
22 like to see if there's some way that we can sustain  
23 incentive funding for those programs as the number of  
24 vehicles served increases.

25           We are also looking at regional readiness

1 planning for all Alternative Fuels. Some of you might  
2 know that we received proposal for a solicitation on  
3 plug-in electric vehicle regional readiness, and that  
4 received excellent response. We are also considering  
5 the possibility of similar needs for other alternative  
6 fuels, such as hydrogen or natural gas, perhaps.

7           We are going to be asking ourselves how we  
8 want to focus our funding for alternative fuel  
9 infrastructure. This is more important for some types  
10 of fuels than others. And finally, we are looking for  
11 input on how we might develop open and competitive  
12 solicitations for emerging opportunities in innovative  
13 technologies and advanced fuels, Federal cost sharing  
14 projects. We have set aside a certain amount of funding  
15 in the last, I believe, two investment plans, but part  
16 of the catch with that funding is that it's tricky to  
17 get out the door because a lot of the times that  
18 proposals that we received are so unique that it's very  
19 difficult to do a competitive solicitation for them, and  
20 so we would be looking for opportunities on ways that we  
21 can get that funding out the door. So those are a few  
22 of the ideas that we are visiting. I also wanted to  
23 queue up discussion for the Advisory Committee and  
24 public's input on the ideas mentioned here, answering  
25 any clarifying questions about the previous slides, and

1 then also find out if there are any other big  
2 considerations that we should keep in mind. And with  
3 that, I will return the discussion portion back to  
4 Commissioner Boyd.

5 VICE CHAIR BOYD: You're going to trust me  
6 with it? Okay, folks around the table? John Shears.

7 MR. SHEARS: Yeah, I just was sort of  
8 thinking, just wondering if some of these, like, you  
9 know, visioning points might also be good to include  
10 when we're thinking with a broader frame for the  
11 benefits report, you know, how much it is informed, you  
12 know, the visioning going forward, and as part of this  
13 regional readiness planning, I think it's good too  
14 because, again, to tie it back in terms of economic  
15 development, is that through that approach, I think it  
16 also highlights potential synergies in terms of job  
17 training and that because I think it should really help  
18 overall, you know, raise the visibility of the program  
19 locally, regionally, and also, you know, through those  
20 regional efforts I would presume those regional  
21 readiness councils would also be looking for trying to  
22 maximize the local training for alternative fuel  
23 technologies and vehicle technologies, etc., so there's  
24 a connection there, so that might be also good just to  
25 sort of some of these, you know, a few of these key



1 points from the presentation might also be good for the  
2 Benefits Report.

3 VICE CHAIR BOYD: Steve. Or, go ahead Brian,  
4 maybe jobs.

5 MR. MICHAEL: With increased emphasis on  
6 economic development and manufacturing as one of the  
7 bullet items here, it sounds like you have already  
8 talked with Mike Rossi, the Governor's Senior Advisor on  
9 Jobs, but they want to have a more formal outreach or  
10 integration with the GoBiz staff, particularly now that  
11 it's been put in statute effective the beginning of the  
12 year.

13 VICE CHAIR BOYD: Thank you, yes. We did have  
14 said meeting with those folks and we agreed afterwards  
15 we need to get together and talk more about these  
16 issues. We find ourselves, when we come together in  
17 meetings, saying the same things about certain potential  
18 opportunities, but we hadn't talked to each other about  
19 it yet, so we want to combine our limited efforts into  
20 something with a little better synergism, so thank you.  
21 Steve.

22 MR. KAFFKA: I'd just like to say that one of  
23 the things I think has been good about the AB 118  
24 Program has been its breadth. As we've talked about  
25 today, there is so much uncertainty in all arenas,

1 policy, technology, feedstocks, and so on, and I think  
2 that it's good for this program to essentially maintain  
3 a broad portfolio of opportunities because it's still, I  
4 think, from everything I can tell and the experience  
5 I've had over the last years in this arena, it's still  
6 very difficult to know what the winners are going to be  
7 in terms of technology and biofuels. It's a bit like  
8 trying to, you know, hold a cup of tea steady while  
9 you're shooting rabbits, there's so much -- you know,  
10 keeping a program moving forward with all the kind of  
11 rough and bumpy changes that are occurring, so I want to  
12 make -- I want to emphasize that I think it's good to  
13 have a broad portfolio of investments and maintain that.

14 VICE CHAIR BOYD: Thanks. This reminds me of,  
15 again, being my last shot at the microphone, of  
16 something I read in the 1960's about the ever  
17 accelerating pace of technological development, that I  
18 thought as kind of a techno wonk at the time, was  
19 intriguing and interesting, and frankly, based on the  
20 career I've had, I believe very firmly in it. The other  
21 thing, though, that I've learned over these same years  
22 is the evolution of sociological processes not follow  
23 pace with technological process, so people get in the  
24 way of some of these good ideas sometimes. But in any  
25 event, I think that's an excellent point you make and

1 that's what I try to impress the staff with and one  
2 point I was trying to make earlier about don't be afraid  
3 to turn the corner on looking at some new and good  
4 things to do, so if we melded all the thinking together  
5 here, you'll have a pretty good plan. Any other folks  
6 at the table? Bonnie and then Tim.

7 MS. HOLMES-GEN: I was just -- I know that  
8 there's a short timeframe because of the legislative  
9 deadlines next year, but I think it would be helpful to  
10 have another discussion about kind of the 2020 vs. 2050,  
11 kind of the short vs. long-term goals and talking again  
12 about specifically the 2050 goals to get to like 80  
13 percent or more for non-petroleum and what are the major  
14 gaps and obstacles that we're facing, and just to frame  
15 our discussion of this next Investment Plan in light of  
16 that.

17 And second of all, I just want to second or  
18 support the Regional Readiness Planning for Alternative  
19 Fuels, I think that's very important and I think that's  
20 a good focus also for this next plan.

21 VICE CHAIR BOYD: Tim.

22 MR. CARMICHAEL: Thank you. Could I start  
23 with asking Charles to say what he said again, or expand  
24 on the integrated centers focused on expanding  
25 alternative fuels point?

1           MR. PEREZ: Sure. Thanks for that question,  
2 Tim. What we're looking at here is we've received quite  
3 a few proposals ranging from the Bay Area to Southern  
4 California to the San Joaquin Valleys whereby entities  
5 would come forward and put together technology centers  
6 that would house a variety of alternative fuel vehicle  
7 infrastructure, as well as have an education component,  
8 as well as maintenance and operation for those  
9 facilities all housed at one location. We didn't have a  
10 solicitation that would encompass that type of activity,  
11 so that's why we thought we would bring it back to this  
12 group an idea that we might fund down the road. So  
13 that's essentially what we're looking at.

14           MR. CARMICHAEL: Thanks for clarifying. My  
15 only other thought is I've said before, as have previous  
16 Advisory Committee members, that part of the reason the  
17 Energy Commission takes heat for this program and the  
18 Investment Plan is the perception that some of the  
19 decisions that are made are political, as opposed to  
20 based on a more scientific metric. And, unfortunately,  
21 I can't think of his name, but a former Advisory  
22 Committee member that worked for one of the investment  
23 venture capital groups made -- Will Coleman, thank you  
24 -- I think he made this point so well, and I really  
25 encourage the staff to think more about this and even,

1 you know, contact him for some more feedback on this  
2 point. To the extent that the future plans, starting  
3 with next year, can demonstrate more clearly what metric  
4 is being met or what metric you're using to evaluate the  
5 comprehensive funding program, or individual projects  
6 that you're considering, I think you put up a really  
7 good defense against a lot of the critics, the  
8 criticisms that we've heard in the past. And I think  
9 that's where we want to go. I agree 100 percent with  
10 Steve's earlier comments about appreciating the spectrum  
11 or the portfolio approach that this agency is taking  
12 right now, I think that's the right thing to do, and I  
13 think they're not incompatible, the two points are not  
14 incompatible, I think they can be done together. But to  
15 the extent that we can incorporate in the plan and, you  
16 know, use as part of our argument for or defense of this  
17 plan, clear metrics on why X is being funded and how  
18 that plays out, whether it's the 2050 climate target or  
19 some other target that we're going for, and there's a  
20 number of important targets the state has already  
21 established, petroleum reduction, etc. And I just think  
22 that's a valuable piece that we have not done as good  
23 with on this -- in the past investment plans -- as I  
24 think we need to with future Investment Plans. Thank  
25 you.

1           VICE CHAIR BOYD: Now Tom, John. Pat, was  
2 your hand up there? Or are you just trying to point out  
3 that Tom was trying -- my peripheral vision seems to be  
4 suffering.

5           MR. CACKETTE: I just had three questions  
6 going to the point of, given this is going to be public  
7 on the 10th, and I guess as Advisory Committee members  
8 we won't see it before that. Can you give me some  
9 insight on three areas of infrastructure and what you're  
10 going to propose? So, the first one follows from the  
11 discussion about E85 today and the uncertainty about the  
12 price vs. the volume of fuel. So question one is, will  
13 the plan include money for E85 infrastructure?

14          MR. MCKINNEY: Yeah, Tom, we truly are not  
15 there in terms of staff recommendations up through Pat  
16 and then through the Commission level. So...

17          MR. CACKETTE: And then question two, I don't  
18 know if I'll get the same answer on these, but question  
19 two has to do with the amount of public either 220 or  
20 Fast Charge infrastructure for plug-in vehicles that  
21 might be supported, in particular the balance between  
22 have we completed the conversion of the existing system  
23 -- I don't mean actually "completed it," but funded all  
24 that we need for converting the existing legacy  
25 infrastructure now; and if we have, are you going to

1 fund or propose funding more public infrastructure,  
2 given the uncertainty of how much we need and the  
3 learnings that we don't yet have from the DOE/everybody  
4 else San Diego experiment?

5 MR. MCKINNEY: So staff briefed Commissioner  
6 Boyd on the proposals, I would say rapidly evolving  
7 thinking from a number of the EV companies, so we  
8 summarized the concepts that Tesla, Mitsubishi and  
9 Nissan have put forth for a Fast Charging network in  
10 California.

11 MR. CACKETTE: Does that mean that's going to  
12 be funded? Or there's going to be funding available for  
13 that?

14 MR. MCKINNEY: Again, staff has no  
15 recommendations. If you on behalf of the Air Board have  
16 recommendations, this is a good place to start voicing  
17 those recommendations, or if you want to shape it one  
18 way or the other, this is really your opportunity.

19 VICE CHAIR BOYD: Do you have a third point?

20 MR. CACKETTE: Yeah, well, I haven't seen the  
21 thing from Nissan at all, so I don't know what they're  
22 proposing, but if that's something that's publicly  
23 available, I'd love to see it and make comments.

24 VICE CHAIR BOYD: Well, I was just going to  
25 say, you know, our two agencies, being that the partners

1 they are, Jim has already said, but between now and the  
2 10th, I mean, staff -- the timing is terrible with  
3 regard to holiday season, but we need to have more  
4 exchange of what we know what you know, input, and from  
5 anybody else here, to help formulate. So Jim is being  
6 honest when he says staff doesn't know quite yet what to  
7 recommend because they're still soaking up all that they  
8 hear. The purpose of this meeting was to not only hear  
9 the benefits plan, but as I tried to tease out at the  
10 beginning, any input that you can give us in this public  
11 forum and what we can do agency to agency, is  
12 desperately needed, quite frankly, by the folks here in  
13 order to make their first cut at what to do.

14 MR. CACKETTE: And the third one is the  
15 hydrogen question. Given that we have the Hydrogen  
16 Collaborative working on potential agreement to obtain  
17 funding for hydrogen infrastructure development, and  
18 that that's looking for other public monies and  
19 therefore kind of leaves a gap, are you planning on  
20 proposing any hydrogen infrastructure funding for the  
21 next Investment Plan?

22 MR. MCKINNEY: Uh --

23 VICE CHAIR BOYD: Same response.

24 MR. MCKINNEY: Thank you, Commissioner, yeah.  
25 But both Toby and Tim are tracking those discussions



1 very closely and we'll bring those back to staff  
2 recommendations on funding levels.

3 MR. PEREZ: And let me just add about this  
4 very compressed schedule that we are under, because of  
5 the benefits report, the legislative staff briefings  
6 last week, and all that, it's been a real challenge, so  
7 they're just now beginning the report. One of the nice  
8 things during this holiday season is Jim and his staff  
9 have assured me that they will deliver this Christmas  
10 gift to me Christmas Eve and I need to quickly turn it  
11 around so that we can get it to Executive Office,  
12 Commissioners, next week. So that's not much time to  
13 put together this report, but thanks to Assembly Member  
14 Wieckowski, this is an update. And one of the things  
15 going forward, and we're going to go forward and really  
16 emphasize in this report that it is a draft, it has not  
17 been fully vetted by this Committee, and make it very  
18 clear there, and we will be holding two additional  
19 workshops with you before we adopt this report, and that  
20 it's just basically a status report of where we've been,  
21 some initial thinking on new ideas. We'll obviously  
22 have to lay out some funding for these categories, but  
23 it is a very initial draft document. So hopefully  
24 that's helpful to provide a little context.

25 MS. HOLMES-GEN: Could I ask, maybe it's the

1 same answer, but then what funding allocation  
2 percentages would be guiding the development of this  
3 plan?

4 MR. PEREZ: Essentially, some of the advice  
5 I've given to my staff is to go back and look at the  
6 current Investment Plan, which was just adopted in  
7 September, a few months ago, and through the public  
8 record, the Docket and all that, what are some of the  
9 main key areas or gaps that would merit further funding,  
10 so that they'll be looking at that, but I think a lot of  
11 the major funding categories will continue to receive  
12 funding; at what level, I don't know until I see the  
13 report on Christmas Eve, so...

14 MS. HOLMES-GEN: Would it generally be in line  
15 with the type of priorities established for the last  
16 year? Is that what you're saying? That's not clear?

17 MR. PEREZ: Yeah.

18 VICE CHAIR BOYD: They're trying to figure out  
19 how to respond to the challenge from this Commissioner  
20 to think outside the box, are there some dramatic  
21 corners we should turn? What have you learned here  
22 today? What other inputs are we getting? And to kind  
23 of keep that dialogue going. Tim.

24 MR. CARMICHAEL: First, I want to wish Charles  
25 and Pat a very lovely holiday off next Sunday. I assume

1 that will be your holiday. And then secondly, I want to  
2 touch on one point that I really -- we pushed on at the  
3 end of the development of the last plan in September,  
4 and it was Chuck White, one of my Board members from  
5 Waste Management and myself, we get the Commission's  
6 perspective that you don't want to stay funding  
7 something for too long because it becomes stale, it's  
8 like "why are you funding this if it's already  
9 mainstream?" But the point that Chuck and I made was,  
10 in the last plan -- let me take a step back -- in the  
11 last plan, you changed the funding for biomethane  
12 infrastructure to pre-landfill supply. There's a logic  
13 there. We get it. But from our perspective, you cut  
14 off the landfill option a bit prematurely. If you look  
15 back -- this program has only been out a few years, but  
16 I believe you've only funded two projects in the  
17 landfill arena, and it's nascent in this state and,  
18 really, across the country when it comes to  
19 transportation supply. And our request in September was  
20 don't eliminate that option, even if you're very clear,  
21 your prioritizing funding of proposals for pre-landfill,  
22 you're not excluding the possibility of funding a  
23 landfill project if it makes sense, or if it's in a part  
24 of the state, or there's something that your team and,  
25 frankly, this Advisory Committee, all say, "Wow, that

1 does make sense because it's different this way, or it  
2 adds to what we're trying to accomplish here." As I  
3 recall, that was like our last concern with what you  
4 ultimately adopted for the 2011-2012 plan, I just want  
5 to mention it, because here you have an opportunity to  
6 address that in the new plan. Thank you.

7 VICE CHAIR BOYD: Eileen.

8 MS. TUTT: Just real quick on the fast  
9 charging, Tom, I'm going to make sure that Nissan comes  
10 and talks to you about what they're doing because it's  
11 pretty exciting. Also, I would suggest Commissioner  
12 Boyd certainly helped found the PHEV Center at U.C.  
13 Davis and Tom Turrentine has been great working with LA  
14 and LADWP and how to install an effective Fast Charging  
15 Corridor Program, they had an initial plan and they  
16 completely turned it around based on their conversations  
17 with Dr. Turrentine. So I would suggest that be part of  
18 your conversation. And then the other place, I'm very  
19 very happy to see that you have involved this regional,  
20 you know, talking to the regional because the efforts at  
21 the regional level are just going well beyond what we  
22 can accomplish on some level because they are -- they're  
23 just closer to their customers, if you will, and their  
24 constituents. And so the degree to which you can work  
25 with those regions and not just in the latest plan which

1 allowed money for regional effort planning kind of  
2 thing, but really gives them some more flexibility to  
3 look at things like workplace charging, because I know  
4 and we've been working, like for example, with the City  
5 of Burbank, they are working -- and Burbank Pasadena  
6 Glendale, there's a lot of studios in that area and  
7 they've been working with the studios to put in  
8 chargers, but they can't use any incentive dollars for  
9 that because it's not an appropriate use of the funds,  
10 and so just giving them a little more flexibility  
11 because they can get that money to where it needs to go,  
12 and particularly I think workplace charging is, in my  
13 mind, the second most common way people are going to  
14 charge their electric vehicles, so the degree to which  
15 the 118 funding can be effectively transferred to get  
16 some of those workplace charging stations in, even if  
17 they're level one chargers because there is some upgrade  
18 needed there, and it's extremely an effective way to  
19 charge at work where you're parked eight to 10 hours a  
20 day, and it's very inexpensive.

21 VICE CHAIR BOYD: Well, Eileen, your comment  
22 reminds me of the meeting you facilitated in Los Angeles  
23 a few weeks ago, which you invited me kindly to speak  
24 at, and there were members of local governments in  
25 there, and we talked about regional, and I'm reminded

1 again how the Plug-In Electric Vehicle Collaborative  
2 landed a million dollar grant from the U.S. DOE to work  
3 in this regional area. The CEC had put in far less than  
4 that, but let's say some of the initial money into that,  
5 and I think the staff, aware of that, is thinking that  
6 needs to be done in perhaps some other fuel areas. But  
7 the point I really want to make here is that, as we all  
8 try to figure out what's the right mix of charging, and  
9 we were early on guided a little bit by politics, and  
10 then somewhat more by studies done by others, including  
11 the U.C. Davis Plug-In Center, as well as European  
12 experiences that home charging is really the most  
13 important and work charging is probably the second most  
14 important, so please local elected officials and others,  
15 don't overdo the demands for, you know, publicly seen  
16 opportunity charging, or it will use up -- over-use the  
17 dollars and skew the charging in a way that doesn't seem  
18 to be where things are going. But this -- it goes to  
19 Tom's point about the question on the table about Fast  
20 Charging, some of the early information was Fast  
21 Charging was liked, but Fast Charging wasn't -- some  
22 manufacturers don't like it for fear of what it does to  
23 the battery's life, etc. etc., so we need to resolve  
24 real quick whether it's a good thing or not a good  
25 thing, or whether it's company specific or not, and the

1 work that's been done that even I haven't caught up 100  
2 percent on, by Dr. Turrentine and others, is probably  
3 going to help guide us on the answers to that, probably  
4 not all batteries are the same, etc. etc. So there's a  
5 lot to learn in a very short period of time, which gets  
6 to my last point, which actually was triggered by  
7 something that Bonnie said earlier, which was in my  
8 notes to say at the beginning of the meeting, and I  
9 didn't, is while we're rushing to judgment -- well,  
10 we're rushing this year to meet this legislative  
11 requirement for a draft, I think the staff has indicated  
12 there will be more time to take them up with the final,  
13 and I think we'll have the courage of our conviction to,  
14 if we have to change it, we change it. The other thing  
15 is we've been at this long enough, you all have been at  
16 this long enough, to also consider, while we don't have  
17 too many meetings, the ideas of, okay, mid-course  
18 corrections, and I don't mean year to year, I mean maybe  
19 in the middle of a year. I mean, things are truly  
20 happening more and more rapidly, and I think perhaps  
21 that needs to be stated in the Benefits Report because I  
22 think some of the input of the dollars from this program  
23 has given incentive for things to happen more rapidly,  
24 and that needs to be acknowledged, but it also therefore  
25 dictates that we may have to change course more quickly

1 once in a while and change emphasis. So I think you're  
2 going to have to take that all into account, and all the  
3 while the economy of the state and the revenues of state  
4 government don't get any better. So the staff you see  
5 is the staff you get, I think, for quite some time. So  
6 enjoy Christmas day, at least, in any event. Okay, any  
7 other -- yes, John. Then we've got to give the public a  
8 shot here.

9 MR. SHEARS: Yeah, just wanted to -- Bonnie  
10 and Tim's remarks just sort of reminded me -- this is  
11 going back to the Benefits Report and reframing. I'm  
12 just wondering if it would be helpful to contextualize  
13 the program in terms that it's trying to achieve, you  
14 know, near, mid-term, and longer term goals for those  
15 people that are looking for more, especially, you know,  
16 as we're all familiar with hydrogen, even though the car  
17 companies will stand behind their plans to deliver  
18 cumulatively, you know, roughly 50,000 cars by 2017, I  
19 think it would be helpful to go back, I mean, we had  
20 this discussion the first year of the Advisory Committee  
21 meeting when we were trying to help grapple with the  
22 strategic challenge staff faced and try to figure out  
23 how to build the program, so I think it would be good  
24 just to have that be a reminder as part of the opening  
25 frame and that this program is really about building the



1 onramp to California's Alternative Fuel future, so it's  
2 not -- this, in and of itself, is not the solution, this  
3 program is about helping to develop the solution by, you  
4 know, also it's a good talking point. And then I was  
5 just looking, couldn't help but notice, you know, we've  
6 got \$375 million invested and, on the low range, 375  
7 million gallon displacement of petroleum, so it's like a  
8 dollar a gallon. Just wondering if playing around with  
9 some of the numbers that way might help emphasize cost-  
10 effectiveness. So, just a quick few parenthetical notes  
11 to close.

12 VICE CHAIR BOYD: God, Tom and I used to  
13 shudder of anything cost \$.10 a gallon. In any event,  
14 good point, good point. We're going to turn to the  
15 public in the room or on the phone in just a second  
16 here, but I did want -- I want to say one more thing,  
17 another blatant naked compliment or commercial, and  
18 saying John Boesel sitting in the back of the room, I  
19 just -- this last public opportunity, John, I just want  
20 to thank you for the work you did in creating the  
21 CalSTEP group which created the report, that led  
22 Assemblyman Nunez to craft and draft AB 118, that led to  
23 this program. And that was all predicated on a  
24 recognition that, for years, many of us had tried to get  
25 some money back to the Energy Commission to spend on

1 vehicle technology and fuels technology like they had in  
2 the good old days when Tom and I and the Energy  
3 Commission worked together on Alternative Fuels for  
4 energy security reasons and air quality reasons, it  
5 never changes. And we are eternally grateful for AB 118  
6 and what it stands for, I've just got to give John the  
7 credit he deserves, along with Assemblyman Nunez and his  
8 then aid, Jennifer Galehouse, well, and a lot of people  
9 in this room, quite frankly, got into it, but the germ  
10 was with CalSTART which started CalSTEP, and I've  
11 obviously never forgotten that because I have said on  
12 many occasions, and this is my last official occasion,  
13 John, so thank you. All right, public comment. Anyone  
14 in the room want to comment on this last item? And I  
15 neglected any Advisory Committee members left on the  
16 phone who wanted to comment on this last discussion that  
17 I didn't give an opportunity to. Hearing nothing, there  
18 is one person who is on the phone, who has turned in a  
19 blue card, who stands between us and some of our 12:00  
20 meetings. Mr. Staples, is that you?

21 MR. STAPLES: Yes, it is me, thank you very  
22 much, Mr. Boyd, for giving me this opportunity to speak.  
23 First of all, I want to thank you for all the work that  
24 you've done. I understand that you're going to be  
25 leaving us next year and that's going to be a great loss

1 to this organization because, let me just say, this  
2 organization has come a long way from being the  
3 organization that started out basically, you know,  
4 leasing offshore oil drilling operations, to now taking  
5 on public's wealth for increased alternative fuels. And  
6 that's a difficult switch to make, dealing with those  
7 guys and not dealing with all of us crazies out here.  
8 So I appreciate the effort and the transformation of the  
9 organization, especially with the RFPs. I mean, from  
10 when I started out with this, the first time I started  
11 an RFP from the organization years ago, I got something  
12 that looked like an Encyclopedia Britannica and now I  
13 can actually read the document myself. So I thank you  
14 or the efforts that you brought in this organization.  
15 And also, Peter Ward, too, you've done a magnificent job  
16 trying to administer all this and deal with all of us,  
17 you know, nipping at your heels all the time, and if  
18 I've been a little bit too aggressive in that in the  
19 past, please accept my apologies for making your life  
20 miserable. So, here I go again. So I've got a few  
21 comments I want to make, in spite of all this.

22 For the last two years, as you know, I've been  
23 somewhat nipping at your heels over hydrogen, saying we  
24 need to put more into the funding of it, especially the  
25 funding that, you know, it started out with, the first

1 year it was forming, I know that was just a number,  
2 okay, you guys have to work with the numbers the best  
3 you can, and I get it, except for the fact that over  
4 those few years, I've also been recruiting, I've  
5 contacted over 300 oil gas station owners over the last  
6 two years, interested over 100 in what we're doing, and  
7 have recruited at least 20 at this juncture to  
8 participate in this effort. And they get it. They see  
9 that hydrogen and fuel cell electric vehicles are the  
10 only business model that works, okay, for their  
11 activities as well as for our energy paradigm because  
12 it's something they can actually sell, okay, it's  
13 something that people can use with their current  
14 paradigm. And it is easily transferrable. So my  
15 request for you guys would be to really re-look at the  
16 allocation of the funding and try to get back closer to  
17 where we started, okay? Because if the vehicles are  
18 going to be successful and, believe me, the automobile  
19 companies -- I've never been one to basically, you know,  
20 kiss the ground they walk on, okay, so I will basically  
21 say, but they have done a magnificent job in developing  
22 this technology and getting it ready for prime time.  
23 They signed an agreement with the State to put the  
24 system out, they put billions in it, the government has  
25 also put hundreds of millions in it over the years, and

1 they're ready for prime time which is something -- in a  
2 time period that is almost unheard of. So, the point  
3 being is, these vehicles are ready for prime time,  
4 they've developed it, they spent the money, they did  
5 what they said they agreed to do, now we've got to make  
6 sure that the infrastructure is there to support it,  
7 okay? The more infrastructure you have out there, the  
8 more the public are going to see that, and the more  
9 they're going to want to purchase the vehicles. That is  
10 the key. And at this juncture, that's where we're at at  
11 this point because the vehicles have been developed,  
12 they're ready for deployment, they're some of the best  
13 vehicles -- my partner owns one of them and he loves it,  
14 all right? So there is not going to be a problem with  
15 performance of the vehicles, there's not going to be a  
16 problem with the maintenance and the fueling of the  
17 vehicles. The only problem is going to be, will we have  
18 the infrastructure out there to support it. And I think  
19 we as a people and as a government owe not only an  
20 industry that's been really really hurt over the last  
21 several years, but also for our own benefit of trying to  
22 achieve the goal of fighting climate change and also air  
23 pollution, in general, as well as sustainable energy  
24 paradigm. So from that perspective, my answer to how to  
25 focus the funding on alternative fuel infrastructure is

1 to increase the amount needed for that, okay, because  
2 these gas station owners, they get it, they want to see  
3 this happen, they want it to become economical. The  
4 only way it's going to happen is with economies of scale  
5 development, all right? And the only way that that's  
6 going to happen is if the government can step in. These  
7 funds, although be it, it is government funds, it is  
8 connected to the amount of vehicles that people purchase  
9 and drive every year, they will be paying for it out of  
10 that, so this is not something that's going to be  
11 subject to the General Fund as much, although your staff  
12 is, and I sympathize with that, but the fact is that the  
13 funding will be available. We need to allocate it  
14 appropriately to that which will work, and that which  
15 will get us to where we want to be as quickly as  
16 possible. Now, so that's my opinion on the allocation,  
17 okay?

18 I'd also like to suggest something else that I  
19 think would be a very good way to help make the whole  
20 process more successful. There is a program within all  
21 this funding that deals with curriculum development for  
22 community colleges, but it seems to be restricted only  
23 to community colleges, all right? And to job training,  
24 you know, simply quickly train, retrain engineers and  
25 get the money. You know, that's good and that should be

1 supported, but you also need to be able to allow four-  
2 year universities to develop the workforce for the  
3 future because none of this is going to matter on any of  
4 these alternatives if there isn't trained people out  
5 there to handle it. The worst situation that could  
6 happen for me is to get these systems out there, get 100  
7 systems out there, then I don't have anyone trained to  
8 handle it. Okay? So we need to kind of work both these  
9 efforts together and I think a couple million a year  
10 maybe into training, curriculum development in the four-  
11 year universities, because we're going to need new  
12 engineers come out, not just us old guys, okay, getting  
13 re-trained, but we're also going to need new engineers  
14 coming out for this future and new technical expertise  
15 in the area. And one of the things I see is, when we  
16 deploy -- if we are successful and we're able to get  
17 these system out there, is that in the very beginning  
18 it's going to require people with expertise and also who  
19 knows the science, not just because they took a few  
20 courses at a trade school, but they understand the  
21 science. Granted, it'll be really nice if we could have  
22 engineers come over right away, but engineers being  
23 retrained, they're not going to be looking for a job  
24 doing technical monitoring and maintenance on systems,  
25 they're going to be looking for jobs doing engineering

1 design and installation. That will be important, but it  
2 also will be important in the very beginning to weed out  
3 these systems and make sure that they are working at an  
4 optimum rate, at a price that makes it feasible. And  
5 the perfect situation is interns headed for colleges and  
6 universities. And I would like to express an interest  
7 that you consider changing the program to allow also  
8 universities, four-year universities to participate, and  
9 not just for two-year colleges and trade schools.

10 VICE CHAIR BOYD: Okay, Paul.

11 MR. STAPLES: So that's something I'd like to  
12 add to the discussion and see what other people think.

13 VICE CHAIR BOYD: All right, thank you for  
14 your input. The staff has absorbed this and certainly  
15 will take all of that into account and the final design.  
16 So thank you for your comments. I don't want to get  
17 into a discussion with you now, but I would point out  
18 the Energy Commission never in its history approved  
19 offshore oil leases, you must have us confused with  
20 someone else. But you and I can talk about that offline  
21 someday.

22 MR. STAPLES: Oh, okay, well, my mistaken,  
23 then. My apologies.

24 VICE CHAIR BOYD: I want to thank all the --  
25 ah, Mr. Carmichael has his hand up.



1           MR. CARMICHAEL: Well, I know you want to get  
2 the last word, but I do want to express my appreciation  
3 for all the effort that you've put into this program, as  
4 well as to Peter Ward, it's been a pleasure working with  
5 both of you on this very important effort.

6           VICE CHAIR BOYD: Thank you, Tim.

7           MR. KAFFKA: This is Steve Kaffka, please let  
8 me second that, for a lifetime of effort to serve the  
9 State of California, for both of you, it's just deeply  
10 appreciated.

11          VICE CHAIR BOYD: Thank you for both --

12          MS. TUTT: All in favor --

13          VICE CHAIR BOYD: Thank you, it's been nice  
14 working with all of you. It's been more fun working  
15 with you than venturing outside of government and trying  
16 to work, so some of us have just stayed to deal with the  
17 challenge. Well, thank you everybody. Appreciate you  
18 being here and, under these circumstances so close to  
19 the holidays and everything else we have to do, it's  
20 doubly appreciated by me. So I wish you all a happy  
21 holiday. I wish the staff the best holiday they can  
22 possibly eek out under the circumstances, and watch the  
23 spatial -- and we do need your input, so if you've got  
24 some thoughts and comments on how to make this better,  
25 how to sell better, you know, data that helps us, we

1 honestly and openly solicit that. And I thank you all  
2 and I'll see you next year in some setting somewhere.  
3 Happy Holidays.

4 (Adjourned at 12:41 p.m.)

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**REPORTER'S CERTIFICATE**

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were reported by me, a certified electronic court reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF,

I have hereunto set my hand this 28th day of December, 2011.

A handwritten signature in cursive script, reading "Peter Petty", is written over a horizontal line.

PETER PETTY  
CER\*\*D-493  
Notary Public