

BEFORE THE  
CALIFORNIA ENERGY COMMISSION

In the Matter of: )  
 ) Docket No. 09-ALT-1  
AB 118 2010-2011 )  
Investment Plan )

Staff Workshop for the 2010-2011 Investment Plan  
(Biofuels Waste-Stream, Purpose Grown, and  
Bioengineered Feedstocks, and Production  
Technology and Economics)

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**ORIGINAL**

MONDAY, SEPTEMBER 14, 2009

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Peter Ward  
Jim McKinney  
Ysbrand Van der Werf  
Pilar Magana  
Bill Kinney

**Also Present**Presenters

Dean Simeroth, CA Air Resources Board (CARB)  
Steve Kaffka, UC Davis, CA Biomass Collaborative

Panelists

Delores Santos, NELLA/Calgren  
Bob Walker, Swan Biomass  
Dave Rubenstein, California Ethanol and Power (CE&P)  
Brian Pellens, Great Valley Energy (GVE)  
Fernando Garcia, Amyris  
Michael Redimer, Community Biofuels  
Eric Bowen, CA Biodiesel Alliance (CBA)  
Rick Shedd, Department of General Services  
Mark Sperling, Interstate Oil Inc.  
Rob Elam, Propel  
Steve Bond, Blue Sun Energy  
Sean Lafferty, Blue Sun Energy  
Public

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## P R O C E E D I N G S

1  
2 SEPTEMBER 14, 2009

9:00 a.m.

3 MS. BAROODY: We really appreciate you taking the  
4 time to be here with us today. And also, welcome, those of  
5 you who are listening online. Last week, we had a very  
6 successful and informative electric drive workshop in  
7 Diamond Bar, and I expect the next few days will be quite  
8 useful, as well.

9 Before I go on, I would like to introduce our team  
10 from the Emerging Fuels and Technologies Group within Fuels  
11 and Transportation Division. I am Leslie Baroody. I am the  
12 Project Manager for the 2010-2011 Investment Plan. Charles  
13 Smith is Assistant Project Manager. Jim McKinney here on  
14 the left is Supervisor for the Policy Unit and Coordinator  
15 for this Biofuels Workshop. He is assisted by Rhetta  
16 deMesa, Mike McCormack, Bill Kinney, and Ysbrand Van der  
17 Werf, and they have all put this workshop together. Peter  
18 Ward and Tim Olson, they were authors of last year's  
19 Investment Plan and are experts on alternative  
20 transportation fuels and technologies. Peter will be  
21 speaking shortly, and Jim and Tim will be moderating the  
22 panel discussions. Pilar Magana will be assisting today  
23 with the WebEx and PowerPoint presentations, and this  
24 meeting is being publicly broadcast via WebEx and the

1 transcript and audio will be posted on our website.

2           Now I have to attend to some housekeeping details  
3 if you will bear with me. For those of you not familiar  
4 with this building, the closest restrooms are located over  
5 there, there is a snack bar on the second floor under the  
6 white awning, and lastly, in the event of an emergency and  
7 the building is evacuated, please follow our employees to  
8 the appropriate exits. We will reconvene at Roosevelt Park  
9 located diagonally across the street from this building.  
10 Please proceed calmly and quickly, again, following  
11 employees within your meeting, to safely exit the building.  
12 Thank you.

13           Well, the main purpose of today's workshop is for  
14 the Energy Commission staff to acquire information needed to  
15 provide the basis for allocating \$100 million in AB 118  
16 funds. We need updated information on biofuels, waste  
17 stream, purpose ground, and bio-engineered feedstocks, as  
18 well as reduction technology and economics. This workshop  
19 is just the beginning of data collections. We will continue  
20 the process with a review of the docketed materials,  
21 subsequent dialogue and additional input.

22           We have a full agenda today and we want to have  
23 time for public comment at the end of our day, and for those  
24 in the audience and on the WebEx. Our introductory speakers  
25 will be Peter Ward, who will provide an overview of the AB

1 118 Investment Plan process. Jim McKinney will review the  
2 status of the Instate Biofuel Production and Use. Ysbrand  
3 Van der Werf will discuss Biofuels Pathways. And Dean  
4 Simeroth from the Air Resources Board will give a  
5 presentation on the Low Carbon Fuels Standard. If you refer  
6 to your agenda, the morning panel will be from the Biofuel  
7 Production Panel, followed by lunch at noon. At about 1:15,  
8 we will begin the Wholesale and Retail Biofuels Panel. And  
9 we will break at about 2:30. Then, at 2:45, Jim McKinney  
10 and Steve Kaffka will lead a discussion on sustainability,  
11 followed by a public comment session at about 4:30. If we  
12 proceed according to schedule, we should be able to adjourn  
13 by 4:30. So tomorrow's agenda will include panel  
14 presentations on Algae, Biofuels Feedstocks and Biomethane  
15 Transportation.

16 As I mentioned before, this is the second in a  
17 series of workshops in September. The next slide shows the  
18 other scheduled workshops. This Friday, we will be in Long  
19 Beach at the Long Beach City Hall for a one-day natural gas  
20 propane vehicles workshop. We are planning on having an  
21 electric drive infrastructure workshop, as well, probably at  
22 the end of the month or beginning of October in San  
23 Francisco, and then on September 29<sup>th</sup>, we will be having a  
24 hydrogen workshop right here at the Energy Commission.

25 Well, the next step in this whole Investment Plan

1 process is for staff to take all the information we have  
2 gathered over this month at these workshops and incorporate  
3 them into a Draft Investment Plan. We plan to have a draft  
4 ready for our first Advisory Committee meeting in November  
5 of 2009, and then we will have two more public workshops for  
6 the Draft Investment Plan, followed by one more Advisory  
7 Committee Meeting in December. We would hope to have a  
8 final draft by January of 2010. So if you are not already  
9 on our list, I encourage you to sign up. You can go to our  
10 website under AB 118, on the bottom right hand corner there  
11 is a place to put your name and your e-mail, and you will be  
12 on our list serve. Thank you very much for your attention  
13 and I will hand over the mic to Peter Ward.

14 MR. WARD: Thank you, Leslie. Good morning,  
15 everybody. Thank you all for coming and thank you to all  
16 those that are on the phone or on the WebEx who are  
17 participating in the Biofuels Workshop today. We really do  
18 appreciate everybody's input and we are recording this,  
19 obviously, and we are desperately reaching out to get all of  
20 your input for the next iteration of the Investment Plan, as  
21 Leslie mentioned. It was just last April that we adopted  
22 the first Investment Plan, and we are about the business of  
23 developing the next one for next fiscal year 2010-2011.

24 I would like to start off -- there was a request  
25 over the phone that we define biofuels. And I think it came

1 to me, I believe, I got the short straw, so I will take a  
2 crack at it. I could be corrected, I am sure it may be more  
3 expansive than I am going to give, but in my opinion,  
4 biofuels are the fuels that we can derive renewably, either  
5 from purpose-grown crops, residues and waste resources from  
6 a variety of different sources. They can be from water  
7 treatment, it could be from forest residue slash, it could  
8 be agricultural prunings and residues from agricultural  
9 production and food processing alike. I think all those are  
10 included at this point. The fuels we can produce are fairly  
11 extensive, it can be renewable diesels, biodiesel, Ethanol,  
12 cellulosic Ethanol and biomethane, as well. Biomethane has  
13 an awful lot of promise at this point, as we know.

14 California Nation States statistics, you may have  
15 heard this before, we have pretty much focused on this  
16 California, as a nation would be a very large enterprise in  
17 and of itself with 36.8 million people, a GDP of about  
18 nearly \$2 trillion, the 8<sup>th</sup> largest economy, as some say,  
19 depending on the inclination of the French. GHG emissions  
20 440 million metric tons, that was a 2004 statistic, 7.2 of  
21 U.S. emissions, and the tenth largest emitter on a global  
22 scale. Transportation accounts for 38 percent of all the  
23 GHG emissions, and that is really the focus of our program I  
24 will be discussing today, in the transportation sector. In  
25 California, we have over 26 million vehicles and nearly a



1 million trucks. Our annual fuel consumption is 20 billion  
2 gallons, that is well over a billion and a half gallons a  
3 month, 16 billion gallons in gasoline and 4 billion gallons  
4 in diesel. We are the third largest consumer of vehicle  
5 fuels after China and the U.S. nations.

6           As a precursor to the AB 118 program, the  
7 California Alternative Fuels Plan was developed in  
8 cooperation, jointly, with the Air Resources Board, and  
9 jointly adopted in December 2007. The principal Program  
10 Manager for that is with us today, Tim Olson, he is the  
11 expert on that. If you ask Tim a question, I think he can  
12 go to the page and the paragraph for you, he would be happy  
13 to do that, and also we have Dean Simeroth from the ARB  
14 side, I think he may not be able to cite the paragraph, but  
15 I think the page he could be relied upon for. This, as I  
16 say, was a precursor for this. We outlined for one of the  
17 first times, the full fuel cycle analysis of all the  
18 alternative fuels. I think that was groundbreaking work for  
19 the time. And as we were finalizing that report, the Low  
20 Carbon Fuels Standard was proposed in an Executive Order by  
21 the Governor in January 2008, and the full fuel cycle  
22 analysis of all fuels became very critical to that effort,  
23 and we have supported that effort since the beginning.

24           The goals that were established for alternative  
25 fuels are 9 percent in 2012, 11 percent in 2017, and 26

1 percent in 2022. We found through the Alternative Fuels  
2 Plan that those amounts were achievable in a mid-range  
3 development scenario. If those alternative fuels were  
4 produced and used, that would result in a displacement of 4  
5 billion gallon gasoline equivalent by the year 2020 of  
6 petroleum. And biofuels can make a large contribution to  
7 this role, and California being number one in agriculture,  
8 number two in forestry, it is very well positioned to  
9 achieve those goals.

10           The Alternative and Renewable Fuel and Vehicle  
11 Technology Program, why don't we just call it the  
12 Alternative Fuel Program here, I think it is a little bit  
13 wieldier, was established by Assembly Bill AB 118 by the  
14 Speaker at the time, Fabian Nuñez, and was subsequently  
15 amended by AB 109, also by Speaker Nuñez. The main purpose  
16 of this program, as established by statute, is the emphasis  
17 of the program is to develop and employ innovative  
18 technologies that transform California's fuels and vehicle  
19 type to help attain the state's climate change policies.  
20 That is the goal and the purpose that we are focused very  
21 well on at this point. In the first Investment Plan, I  
22 think we went through various potential or possible  
23 scenarios to achieve those goals out to 2020, the goal of  
24 reaching the 1990 GHG emissions by the year 2020, and the  
25 2050 goals of reducing our GHG by 80 percent in the year

1 2050.

2           The funding for this program, which was long  
3 awaited, I might add, in the past we have set many many  
4 goals in the state for alternative fuels and had limited  
5 activity in establishing those fuels and vehicle  
6 technologies, but at this point we are very happy to say  
7 that we have substantial funding to actually achieve those  
8 goals and set out to do that business. The program is  
9 funded up to \$100 million a year for seven and a half years,  
10 we were allocated \$75 million in '08-'09, and \$101 million  
11 for '09-'10, and this funding is for the development,  
12 production, manufacturing and deploying alternative and  
13 renewable fuels, advanced vehicles, vehicle efficiency  
14 improvements, for on-road and non-road applications. We  
15 will be emphasizing work force training and jobs creation  
16 and foster education, promotion and technology centers for  
17 environmental, market and technology assessments as we go to  
18 inform the program, and to inform the development of these  
19 fuels and vehicles.

20           State and federal regulatory -- policy drivers,  
21 not just regulatory -- but policy drivers to reduce GHG or  
22 increase demand for the biofuels that we can produce and use  
23 here in California. California's climate change reduction  
24 goals in AB 32, as I have already mentioned, 1990 GHG levels  
25 by the year 2020, and 80 percent reduction by 2050.

1 California's Low Carbon Fuels Standard will achieve a 10  
2 percent reduction in carbon intensity of those fuels by the  
3 year 2020. I believe the program starts for reporting  
4 purposes only this coming January 2010, and the program in  
5 earnest starts January 1<sup>st</sup>, 2011. Our colleague, Dean  
6 Simeroth will be going more deeply into the Low Carbon Fuels  
7 Standard and present all the aspects and all the current  
8 developments in the Low Carbon Fuels Standard for us today.

9 Bioenergy Action Plan established goals, and so  
10 did the Executive Order signed by this Governor. And the  
11 purpose of that was to maximize the contributions of  
12 Bioenergy toward achieving the State's petroleum reduction,  
13 climate change, renewable energy and environmental goals.  
14 The goals that were set in the Action Plan include policy  
15 goals to increase biofuels and use of the fuels, 1 billion  
16 gasoline gallon equivalents by the year 2020, and 2 billion  
17 gasoline gallon equivalents by the year 2050. The policy  
18 goal was to increase the in-state production of biofuels and  
19 these percentages relate to the amount of use in California  
20 at that time, so in the year 2020, the goal is to reduce 20  
21 percent of that which we use in California, in 2020, 40  
22 percent of that which we use in California, and in 2050, 70  
23 percent of that which we use in California. Hopefully it  
24 will be much more and more self-sufficient in the production  
25 of the biofuels we use over time.

1           Also coming into play is the Federal Renewable  
2 Fuels Standards 1 and 2, they have been adopted, it is  
3 fairly complex. Most of you are probably already familiar  
4 with that, so I have not really mentioned much detail here,  
5 but it seems to be on a path to more cellulosic ethanol, and  
6 other supplies rather than corn derived ethanol, and that is  
7 consistent with our program, as well.

8           The AB 118 Investment Plan for the first two years  
9 was, as I say, adopted on April 22<sup>nd</sup>, and the allocations are  
10 here. The electric drive, hydrogen, ethanol, renewable  
11 diesel, biodiesel, natural gas, propane and market developed  
12 in our program support categories totaling \$176 million.  
13 The subtotal for biofuels is \$28 million ethanol biodiesel  
14 and biomethane. It is important to note that, you folks may  
15 be familiar with the fact that we put a program opportunity  
16 notice out to use our funding here, to present it as a match  
17 for the Federal Stimulus Packages in the various agencies.  
18 Those Stimulus Packages totaled well over \$1 billion, closer  
19 to \$2 billion, what is offered for the nation. I think it  
20 is fair to say we could have done better in California, and  
21 we hope to do better in the future with our federal agencies  
22 as partners. That is not to say that we are not continuing  
23 on our own path here as a nation state; you will hear soon  
24 that we will be releasing solicitations for the remaining  
25 funds that we have established in our Investment Plan quite

1 soon in a solicitation in California. It is our  
2 understanding, and maybe we can be corrected today, and I  
3 hope that is not the case, but many of the folks that were  
4 anticipating applying for the AB 118 program went through  
5 the process for the federal match, and are very willing and  
6 able to provide proposals very soon after a solicitation is  
7 released. We think there is a lot of pent up demand, a lot  
8 of those proposals that we saw through the federal  
9 government could be re-crafted and redesigned for our  
10 solicitations, so we are hoping to put our solicitation out  
11 with a very short turnaround and get the money back onto the  
12 street as soon as possible. And that will be a coincident  
13 process with us developing the Investment Plan for next  
14 year. So there will be a lot of activity in this building,  
15 but we are hoping to meet the timelines that will be most  
16 effective for growing these fuels and vehicle technologies  
17 in the state.

18           Breaking down the previous biofuels funding  
19 allocation, E85 fueling stations received \$5 million in  
20 allocation, ethanol feedstock and project feasibility  
21 studies for new plants, \$3 million, new ethanol pilot plants  
22 using waste feedstocks, \$4 million, renewable diesel  
23 production plants using waste feedstocks, \$2 million, and  
24 constructing renewable diesel blending with storage terminal  
25 facilities, \$4 million, and biomethane production plants,

1 \$10 million.

2           Our next steps will be the ongoing evaluation of  
3 the proposals that were successful with the federal  
4 government and to basically allocate the match funding that  
5 is necessary and sufficient for those projects to go  
6 forward. We will be preparing a California-based  
7 solicitation, as I mentioned, in accordance with the current  
8 Investment Plan, and we will be in the process of updating  
9 the Investment Plan for the Fiscal Year 2010-2011. And that  
10 is the process that we are engaged in here today. Here is  
11 my contact information. Thank you all for your attention,  
12 and we are looking forward to a lively give and take today.  
13 Thank you.

14           MS. BARODY: Thank you, Peter. I would like to  
15 introduce Jim McKinney.

16           MR. MCKINNEY: Good morning, everybody. I am Jim  
17 McKinney, one of the supervisors in the Emerging Fuels and  
18 Technologies Office. I will be wearing several hats today  
19 with moderating some of the panels and giving some  
20 introductory information, as well. And as Peter and Leslie  
21 said, thank you very much to everybody for coming and  
22 participating. This is always one of my favorite parts of  
23 the job, is speaking directly with the innovative developers  
24 who we have here in California, and I learn a lot every time  
25 I sit down with somebody who is proposing a new technology,

1 or a plant, or a feedstock. It is really the fun part of  
2 the job for me.

3           So the theme for this two-day workshop is that,  
4 you know, the markets in California really are not  
5 functioning properly in the biofuels sector to get  
6 production in-state, using in-state feedstocks up to the  
7 policy goals as outlined by the Bioenergy Action Plan, and  
8 then some of our own internal staff desires, if I can put it  
9 that way. And what we want to do today is really learn from  
10 you with an emphasis on the market systems, or mechanisms,  
11 what needs to change in terms of pricing, in terms of  
12 technology development, are there policy shifts that are  
13 needed. Really, we want to learn from you what needs to  
14 happen in the California markets, again, so we can tap the  
15 tremendous waste stream potential that we have, so that we  
16 can tap the bioenergy sector if it is a dedicated crop, and  
17 again, it is a tremendous innovation that we have here in  
18 the state on the technology basis. And, again, I look  
19 forward to learning that from you as we go through the  
20 panels.

21           I have got a little bit of summary status  
22 information, forgive the formatting, I was working on this  
23 way too early this morning. But basically I think we have  
24 about a half a billion of new capital investment in state-  
25 of-the-art dry mill ethanol production plants in California.



1 These -- my pointer is getting tired -- the Altra, Calgren,  
2 Cilion, and Pacific Ethanol made substantive investments in  
3 new facilities and nearly all of them are offline and have  
4 been so for most of the year. I think Calgren is making  
5 some heroic efforts to get their plant up and running right  
6 now, which one reason is they -- oh, we will hear a speaker  
7 from them.

8           But just in summary, you can see that, again, we  
9 have got about four or five plants in the 40-60 million  
10 annual gallon production range, again, fairly new  
11 investment. For now, most of the big plants are using  
12 Midwest corn as the preferred feedstock. A major goal for  
13 the Energy Commission is to help foster the transition to  
14 alternative feedstocks with lower carbon intensity values,  
15 perhaps see changes in the production end, whether it is  
16 cellulosic technology, or tapping biogas to substitute for  
17 natural gas, because that really pushes down the GHG  
18 numbers. And as Peter said, the whole point of this is to  
19 push down the GHG numbers for the transportation sector in  
20 California.

21           So some summary stuff. I know all of our speakers  
22 know this better than I, but I will run through it for the  
23 rest of the audience. So the dry mill plants in California,  
24 we call them Destination Model Plants, that means production  
25 is here using feedstocks primarily imported from the

1 Midwest, which is corn, it comes in on rail. It is a wet  
2 grain wet distilling grain process, which means you get some  
3 pretty important animal feed co-products out of that. Some  
4 of the economic comparisons is that Midwest plants have a  
5 larger economy of scale, closer to the feedstock sources, so  
6 they have got some competitive advantage there, but in  
7 California we do not have to dry the grain, so you do not  
8 take that hit on the energy side, and it is coal that is  
9 used primarily in the Midwest, so that pushes up the GHGs.  
10 We also have reduced transportation costs here.

11 We think that all of these new modern plants are  
12 great candidates for what we call front end retrofits, and  
13 that is to start adding process waste biomass or cellulose  
14 from waste streams and purpose grown crops grown here in  
15 California. Some plants are already starting to do these  
16 value-added processes, like extraction of corn oil, but  
17 improvements are needed, as you well know.

18 Basically, we are well short of the policy goals  
19 for in-State production of biofuels at this time, so we have  
20 got about 250 million gallons a year capacity; even if all  
21 of that was operational, we would still be coming up short,  
22 hitting just 25 percent of the target there. When we go to  
23 E10 and 2010, ethanol demand will increase over a billion  
24 gallons a year, but we are still going to be short of the  
25 Bioenergy Action Plan goals. We think it is desirable to

1 see growth in the E85 retail market, which will further  
2 increase demand for ethanol and the low carbon on this. So  
3 bottom line from staff's perspective is that we see a need  
4 for new in-State production.

5           On the biodiesel side, I think we have about over  
6 100 million gallons of in-State capacity right now. And you  
7 can see the distribution here of both the existing plants  
8 production and capacity and so we are at about 65 percent  
9 capacity here for '09. So we have got 12 plants with  
10 production capacities going from 4 to 30 million gallons a  
11 year, again, about 105 million gallons capacity projected  
12 for 2009, five plants at capacity, and we have got two new  
13 plants coming on in L.A. and Chilcoot with additional  
14 capacity. And I am kind of reading from Gary's slide, so  
15 excuse me for reading. So the focus of the industry effort  
16 is improved capacity equalization, which is at about 50  
17 percent in '06-'07, and projected to be over 90 percent in  
18 2010.

19           And I was going to come back to a slide that Peter  
20 already showed. You know, something happened last year with  
21 the allocation of monies for AB 118 in the biofuels sector,  
22 and as I have said in some previous workshops on  
23 sustainability, I think there is a bit of an image problem  
24 with parts of the industry. Again, I just see tremendous  
25 potential to tap the waste trains, to begin the conversion

1 of cellulosic technologies, and to really identify and take  
2 advantage of those purpose-grown bioenergy crops that do  
3 well in California, and that can meet our natural resource  
4 constraints, primarily water and prime ag land soils. So  
5 with that, there is definitely room for growth, but I think,  
6 too, that our Commissioners were sending a very clear  
7 message last year, and that is that they really want to  
8 emphasize this transition to waste stream based feedstocks  
9 and the cellulosic process technologies, which is one of the  
10 big reasons the numbers came out here the way they did. And  
11 that concludes my introductory remarks. I think now it is  
12 Ysbrand Van der Werf's turn.

13 MS. BAROODY: Thank you, Jim.

14 MR. VAN DER WERF: Okay, I am Ysbrand Van der  
15 Werf. I also work in the Emerging Fields and Technology  
16 Office here at the Energy Commission. And I am going to  
17 give a brief talk on carbon intensity of biofuels, how it is  
18 measured. I will go through gasoline and some substitutes,  
19 diesel and some substitutes, then I will talk briefly about  
20 some emerging and potential pathways that do not have  
21 complete pathway emissions calculated yet, then I will break  
22 down three pathways into their components, and finally I  
23 will talk a little bit about what we learned from the ARRA  
24 proposals that we reviewed this past summer.

25 So first of all, all the numbers I am using in

1 this presentation are from the LCFS, from AB 118. And the  
2 first column on the left, the first bar on the left, that is  
3 California Reformulated Gasoline, that is the baseline which  
4 is also the heavy black line here at the top of the graph.  
5 And the bar next to that is ethanol dry mill process with  
6 wet distiller's grains and solubles as a co-product, and  
7 that as you may notice goes up above the baseline, it  
8 actually has higher carbon intensity than gasoline, and that  
9 is because of the indirect land use change. So using  
10 Midwest corn ethanol, whether it is E5, E10, E85, it is  
11 really not going to reduce the carbon intensity at all  
12 compared to just regular gasoline. And next to that, we see  
13 the California corn ethanol has much lower emissions, 16  
14 percent lower, and I will explain why that is when I break  
15 down the pathways into components. And Brazilian sugarcane  
16 has very low direct emissions, less than a quarter of  
17 California corn ethanol, but it has higher indirect  
18 emissions, but it still is much -- there is a lot of  
19 improvement over corn ethanol. And we have two cellulosic  
20 pathways calculated there, forest waste and farmed trees,  
21 and those show about an 80 percent reduction in grams of  
22 carbon dioxide emitted, compared with the gasoline baseline.  
23 And just for comparison, I put in electric vehicles and fuel  
24 cell vehicles, and that is California marginal electricity,  
25 and that is not as good as cellulosic or sugarcane ethanol,

1 but it is better than corn ethanol. And finally, fuel  
2 cells, I have a number in there of 43, that is just one of  
3 the processes for producing the hydrogen, it can go as high  
4 as about 60 grams of carbon dioxide, which is much higher  
5 than, well, it is higher -- it is comparable to Brazilian  
6 sugarcane, it is much higher than any cellulosic emissions.  
7 So, all these pathways to gasoline alternatives are ethanol  
8 pathways.

9           For diesel substitutes, we have natural gas and  
10 biodiesel are renewable pathways, and the bar on the left is  
11 ultra low sulfur diesel, that is the baseline we use in  
12 comparison, and the next bar over is liquefied natural gas,  
13 and if you adjust it for the energy economy ratio, it does  
14 not offer much of an improvement over ultra-low sulfur  
15 diesel. Compressed natural gas does quite a bit better than  
16 liquefied natural gas, and reduces emissions by 20 percent,  
17 and the only difference in those two pathways, the way they  
18 are calculated, is that the emissions from liquefied natural  
19 gas are higher than those of compressed natural gas,  
20 otherwise the two pathways are identical.

21           Now, the next two bars, we suddenly see a big drop  
22 in emissions, carbon emissions, and that is we are getting  
23 into biomethane or biogas. We have CNG made from landfill  
24 gas and from a dairy digester biogas, and those are very low  
25 emissions, but there is not all that much of those

1 feedstocks available.

2           And then finally here, I have two, well, the  
3 biodiesel under renewable diesel pathway, and those also  
4 have extremely low emissions, and you will also note that  
5 none of these pathways have any indirect effects. None of  
6 these are produced from crops, they are all from some sort  
7 of waste feedstock. And, again, there is the -- I put in  
8 the pathways for margin of electricity and hydrogen fuel  
9 cells for comparison and these numbers are different because  
10 the energy economy ratios are not as good for medium and  
11 heavy duty trucks as they are for light duty vehicles, which  
12 I showed in the gasoline and substitutes pathway.

13           Now, emerging and potential pathways, I have three  
14 things here to mention, the first is a pathway that uses  
15 dairy digester gas as a process fuel, and then ethanol by a  
16 refinery. Ethanol by a refinery uses a lot of natural gas  
17 as a power source. If you take that natural gas and replace  
18 it with dairy digester gas, which is also methane that has  
19 been cleaned up, that reduces the carbon intensity a great  
20 deal and the direct emissions go -- it should read the  
21 direct carbon intensity is reduced -- it should read the  
22 total carbon intensity is reduced from 81 to 48 grams of  
23 carbon dioxide per megajoule (MJ). This is a 65 percent  
24 reduction. Actually, those numbers do not quite work out.  
25 The direct intensity of that reduction is 65 percent and

1 those numbers are reduced from 51 to 18. The total  
2 intensity is reduced from 81 to 48, which is a 40 percent  
3 reduction. And California sugarcane ethanol -- I did not  
4 put this on the earlier graph here because it is not  
5 actually calculated as part of the LCFS yet, but the numbers  
6 will be very close to the Brazilian sugarcane with somewhere  
7 in the range of 5 to 20 grams of carbon dioxide emitted per  
8 megajoule. And that is a range, there are a variety of co-  
9 products and different processes, so it is -- we do not have  
10 a single number for it. And California's sweet sorghum,  
11 from everything we have seen, this is going to be very  
12 comparable to California sugarcane and, for both sweet  
13 sorghum and sugarcane, there are a variety of co-products  
14 available. You can produce electricity to use as a process  
15 fuel, and electricity to sell back to the grid. There are a  
16 variety of wheat products that can be produced, also wax  
17 that can be produced, and the presence or absence of those  
18 co-products would change the carbon intensity.

19           And now I am going to break down three pathways  
20 into their components. First, sulfur diesel, and we will  
21 see that, just as sort of a baseline, we will see it has  
22 very low emissions from refining and then corn ethanol has  
23 much higher, well to 10 carbon intensity than diesel, and  
24 then finally Brazilian sugarcane which has very high carbon  
25 intensity of refined, but a very high co-product credit. So



1 the bar on the left is ultra low sulfur diesel, and we can  
2 start at the bottom of the column. The yellow there, which  
3 is labeled "Recovery," that represents the carbon emissions  
4 from the drilling and so forth, and those are 7 grams. And  
5 next up is -- that is the purple, that is the carbon  
6 emissions from transporting the oil, and those are very low,  
7 the transport costs are typically very low, the GREET haul  
8 takes those into consideration, and then the red portion  
9 there are the emissions from refining, and those are 11, and  
10 then transporting the refined oil is -- there are emissions,  
11 but they are around down to zero. So those are very low  
12 emissions from producing the fuel, but the tank to wheels  
13 emissions, the amount of carbon in the fuel is very high,  
14 that is what makes diesel and gasoline -- gasoline looks  
15 very much like this diesel bar, but it is the carbon in the  
16 fuel that makes the difference in -- it is what makes the  
17 emissions so high for diesel and gasoline for fossil fuels,  
18 in general. If you look at the corn ethanol pathways, there  
19 are two that are California bio refinery using Midwest corn,  
20 and then a Midwest bio refinery also using Midwest corn.  
21 These examples, I believe they are both dry mill processed  
22 with wet distillers grains and solubles as a co-product. If  
23 we start with the -- I guess that is brown -- the number is  
24 6, those are the emissions from farming, so just, you know,  
25 putting the crop in the field, the emissions from the

1 tractors and so forth, and those are rather small, but the  
2 blue there, the agricultural inputs, those are the emissions  
3 from pesticides, herbicides, and fertilizers, those are  
4 quite large. And the transport, the purple there, is again  
5 low and the emissions from the bio refinery, that is where  
6 we see California and Midwest differing. Now, actually, the  
7 emissions from transport would also be a bit different, but  
8 those are very small in comparison to difference in the  
9 emissions from refining. Now, the reason for that  
10 difference is simply the source of the power used in  
11 operating the bio refinery. In the Midwest, there is a lot  
12 of coal-based electricity; here in California, we do not use  
13 any coal for the electricity, so that is a big reason for  
14 the difference. And that is what makes California produced  
15 corn ethanol much more desirable than Midwest produced corn  
16 ethanol. And then, if we look at the green down at the  
17 bottom there, those are the credits from the co-products  
18 produced in the dry mill process, which is what distillers  
19 grains and solubles, which are used as cattle feed and can  
20 be sold to farms, and the farms need to be close to the bio  
21 refinery because the wet distillers grains and solubles will  
22 rot within about 24 hours. It is possible to dry the  
23 distiller's grains and solubles, but that takes energy which  
24 dries up the carbon intensity of the ethanol. So typically  
25 in California, all the bio refineries produce wet

1 distiller's grains and solubles. Then, if we look at the  
2 last bar, this is only the sugarcane ethanol. We see a lot  
3 of red and a lot of green. There are huge emissions, carbon  
4 emissions, from the bio refinery, but there are also a huge  
5 co-product credit, and this example here is that the co-  
6 product credit is 130 grams, and the emissions from refining  
7 are just 126 grams, there are actually less in the co-  
8 product credit, and that is because this 130 represents  
9 electricity that is used, it is produced from burning the  
10 gas, so that the residue from the sugarcane, burning that to  
11 produce electricity to run the bio refinery, and then there  
12 is enough electricity produced to sell some back to the  
13 Grid. And this is not the only possible co-product for  
14 sugarcane, there are others, as well.

15           So GREET looks at all steps of the production of  
16 the fuel, whether they run down to zero, they are  
17 insignificant, in the case of transportation costs, and  
18 considers every step from obtaining the feedstock through  
19 the transportation of the fuel.

20           Now, these past few months, we have looked at a  
21 lot of proposals for AB 118 and for ARRA funding, and we  
22 have learned a lot from doing that. First off, we -- well,  
23 if there is a proposal that does not have a pathway, well,  
24 then we will estimate a proxy calculation. We will find  
25 some sort of similar process and we can estimate a

1 greenhouse gas intensity. So just because there is no  
2 pathway, you know, we can still come up with numbers for any  
3 proposal that is submitted. So many of the proposals, we  
4 found it was surprisingly difficult to find the necessary  
5 information in the proposals. Just sometimes it can  
6 literally take hours and we would have two or three groups  
7 of people looking through the proposals just to find the  
8 information that we need to do the calculation. On the  
9 other hand, sometimes the intensity is calculated right  
10 there in the proposal, but there is no data or equations  
11 provided, and sometimes there are obvious mistakes. The  
12 most obvious mistake is with electric vehicles, people who  
13 claim that their proposal has 100 percent reduction in  
14 greenhouse gas intensity because the electric vehicles have  
15 zero emissions, well, that is true, but there are emissions  
16 from producing the fuel, so we need to have basic data for  
17 all proposals and, if nothing else, we need to verify the  
18 assumptions and nuggets used to come up with those numbers.  
19 And greenhouse gas intensity is a difficult calculation, not  
20 because it involves some sort of high level of math, but it  
21 is just hard to come up with the data to use for the  
22 calculation, and hard to know exactly how to -- well, you  
23 want to have consistency in the calculation between  
24 proposals, so sometimes that proposal will have the  
25 calculations done one way and, you know, it is not exactly,

1 you know, it is a little different than other proposals, or  
2 how we do them at the Energy Commission. We want to make  
3 sure that there is just the consistency in the way the  
4 greenhouse gas emissions are calculated between proposals.  
5 So, to that end, it is never a bad idea to put feedstock and  
6 processes, the vehicles in a proposal, any assumptions, the  
7 baseline you are using, equations, and all other such  
8 information together in a single page of the proposal. And  
9 that way you have no doubt that we are looking at the  
10 correct information that you want used in the evaluation of  
11 your proposal.

12 MS. BAROODY: Ysbrand? I think we are getting a  
13 little short on time here. Are you about done?

14 MR. VAN DER WERF: I am done.

15 MS. BAROODY: Perfect. Thank you so much.

16 MR. VAN DER WERF: Unless anyone --

17 MR. OLSON: I would make one suggestion to Ysbrand  
18 and maybe Jim McKinney. A lot of this data we had  
19 internally here that we produced, I think it would be good  
20 to show, whether we post it on the website or have it  
21 available, where we obtained this information, how we  
22 calculated this. I know some of this goes back to the  
23 original pre AB 1007 Report, some of it comes from the Low  
24 Carbon Fuel Standard. I think that would be a wise thing to  
25 do, given that you are kind of describing a methodology and

1 you are asking people in their proposals to us to use that  
2 methodology.

3 MS. BAROODY: Okay, all right. So, Dean Simeroth,  
4 Air Resources Board, to talk on Low Carbon Fuel Standard.  
5 Thank you, Ysbrand.

6 MR. McKINNEY: So Jim McKinney here. While we are  
7 getting Mr. Simeroth set up, I am seeing a number of  
8 questions from Ysbrand's talk and we will take questions on  
9 those later on today because we are a little behind  
10 schedule. Ysbrand had a lot of good information for us, but  
11 let us turn it over now to Dean Simeroth.

12 MR. SIMEROTH: I think we got a minor technical  
13 that we can probably work through. While we are sorting  
14 through some of the technical, maybe some of the background.  
15 As you heard earlier, I am Dean Simeroth, I am with the Air  
16 Resources Board. I am a Branch Chief in the Stationary  
17 Source Division and my branch has been charged with  
18 developing the Low Carbon Fuel Standard. This resulted from  
19 the Governor's Executive Order in January of '07. It also  
20 charged that the University of California would develop some  
21 information to provide to us on recommendations on how they  
22 saw the Low Carbon Fuel Standard being developed. We got  
23 that in about June of '07. The Board acted and identified  
24 as Low Carbon Fuel Standard as something to be done in the  
25 near term, which meant that it had to be in place by January

1 1<sup>st</sup> of 2010. So we actually started working on this in  
2 earnest in the summer of -- sort of mid to late summer or  
3 August. The reason it was so important is transportation  
4 fuels are about 10 percent of greenhouse gas emissions  
5 currently -- they are actually about 40 percent, I am sorry.  
6 We need to reduce those by 2020, down to where we were in  
7 1990, and that is about 160 million metric tons of CO<sub>2</sub>  
8 equivalent per megajoule (MJ) -- or million metric tons,  
9 excuse me, of CO<sub>2</sub> equivalent. About 10 percent of that 160  
10 some odd will come from the Low Carbon Fuel Standard, so it  
11 is a significant part of what we have to do in order to meet  
12 our requirements for reducing emissions under Assembly Bill  
13 32 to set up the greenhouse gas program. It also authorizes  
14 to adopt the Low Carbon Fuel Standard.

15           In developing the Low Carbon Fuel Standard, we  
16 looked at the information as it is being jointly developed  
17 by the Energy Commission and the Air Resources Board, and  
18 today we are about 900 million gallons of ethanol a year,  
19 plus or minus some. There are reductions in 80 percent in  
20 2050, which I heard earlier -- that I covered. The  
21 framework for the Low Carbon Fuel Standard is meant to be  
22 something that is both the near and long term transition to  
23 low carbon fuels, and the near term is looking at, as you  
24 saw earlier, the carbon intensities of various alternatives  
25 that are available in volume and they are not real good

1 compared to gas and diesel, but they allow us to make some.  
2 The longer term is the cellulosic and other fuels that we  
3 are looking for, the biomethane, the algae derived, etc.,  
4 which will give us significant reductions compared to the  
5 conventional fuels. So we are trying to encourage  
6 technology innovation, serve as the model, and set the stage  
7 for future productions, getting to that 2050. There we go.  
8 Ten percent reduction, you have heard 16 million metric tons  
9 of CO<sub>2</sub> equivalent, you have heard, and it is about 10 percent  
10 of our target for AB 32 in the long term. We will increase  
11 the use of biofuels, we also want to incentivize the use of  
12 electricity, hydrogen, natural gas, that also includes the  
13 biomethane, decrease the use of petroleum and the high  
14 carbon biofuels, those are the ones that are competing with  
15 food, etc. We already hit on where we are today and where  
16 we want to be. By 2020, we want to be up in the 3 billion  
17 gallons per year gasoline equivalent.

18           Mechanics -- carbon intensity is the unit of  
19 measurement, it represents greenhouse gas emissions per unit  
20 of energy consumed in the vehicle -- going in the wrong  
21 direction here -- ah, the heart of this is the production by  
22 year, and 2010, you heard earlier, is simply the reporting,  
23 learn how to work the system; in 2011, we start -- 2011 is  
24 very modest, it is .25 of 1 percent; and in 2012, it is  
25 another .25 of 1 percent; along about mid-decade is when it



1 starts picking up, and we are doing it that way  
2 deliberately to allow time for the more advanced biofuels to  
3 be developed, commercialized, and become available. And  
4 that will set the scene for the future, going out to 2050.

5 Providers of the petroleum and biofuels are the  
6 regulated parties. There are some we have identified which  
7 comply through 2020, and those we [inaudible] regulations,  
8 but if they want to earn credits, they can opt in. That is  
9 electricity, hydrogen, natural gas, which also is the  
10 biomethane version of natural gas. We are on the hook to  
11 provide the software tools for the fuel carbon reporting and  
12 credit tracking, that is underway, we expect to have that in  
13 place by January 2010. It is quarterly reporting, but an  
14 annual compliance, so you do not have to comply finally  
15 until you reconcile everything once a year. And December  
16 31<sup>st</sup> is cut off of the year, it is a calendar year, not any  
17 other type of years that are out there. And then the  
18 enforcement is determined over the next four months, early  
19 April, I should say, three months. And then the enforcement  
20 would be looking at reference review, electronically, fuel  
21 inspections, audits and penalties. Let's go to the first  
22 regulation where all of the reporting is going to be done  
23 electronically. That is the little sidebar note here.  
24 This, you have seen earlier, 2020 goal is there, you can see  
25 which fuels we think will meet the 2020 goal, they will --

1 slight variation of these numbers compared to the ones you  
2 saw earlier, you have to look at the details of how these  
3 were calculated to find out where the variations is  
4 inconsistent, there are just different inputs into the  
5 models.

6 Economic analysis -- we think there is a going to  
7 be an overall savings in 2010 to 2020, that depends upon the  
8 price of crude oil and the production costs of the  
9 alternative fuels where we do not know those costs yet. It  
10 could result in slight costs, but we think the price of  
11 crude oil is going to go back up, so we are anxiously  
12 watching what the Energy Commission is going to predict on  
13 that, but I think we are all looking at it going up, I have  
14 not heard anybody talk about it going back down.

15 Federal Renewable Fuel Standard -- that is on a  
16 volumetric basis, but it also set up for the first time for  
17 new car facilities have got to achieve reduction, other  
18 biofuels a 50 percent reduction, cellulosic only 60 percent.  
19 The Federal program nationwide would be about a 3 percent  
20 reduction in greenhouse gas compared to our 10. Where do we  
21 sit in terms of total advanced renewable fuels and what we  
22 need? If you look at the 2020, that is a little above the  
23 10 percent -- or 11 percent, I should say, which would be  
24 our fair share of that, so we need these fuels to come in,  
25 and we need them to come in to be produced in California.

1           The documents to prepare for December -- the  
2 Board approved the regulation in April of 2009. That did  
3 not mean the regulation was adopted then. In the resolution  
4 approving it, it set forth that the Board asked for some  
5 changes to be made to the staff proposal, it also set 21  
6 things for us to do, staff to do between now and December.  
7 Some of the things that we are working on, or guidelines for  
8 developing fuel pathways, so people know what information to  
9 bring to us, and how to do the calculations for the fuel  
10 pathways, the new ones, now. Work plan for sustainability,  
11 best practices, guidance, siting new facilities from an air  
12 pollution standpoint, now. List of biofuels and inherent  
13 land use change, at least those we expect to have a land use  
14 change, prioritized list of additional fuel pathways that  
15 ARB staff will be working on. That does not mean that  
16 proponents cannot bring to us their own proposals and  
17 documentation for new fuel pathways. We are going to form  
18 an expert work group regarding land use change, that is in  
19 process, we hope to have that up and going by the end of  
20 this year. That will give us a chance to reevaluate how we  
21 determine the land use change impacts on the carbon  
22 intensity. And formal carbon intensive screening process  
23 for new or modified fuel pathways, that way people can see  
24 if they have a chance of making improvements before they  
25 invest in developing the formal pathway. Specifications in

1 the evaluation of biodiesel and renewable diesel, that is  
2 underway. We will start that this fall. The testing is  
3 finally done, there should be a workshop on the 24<sup>th</sup> of this  
4 month, putting out the results of the testing, then we start  
5 working on the specifications. Definitions and safeguards  
6 for biomass, renewable biomass. Congress is proposing to  
7 change those definitions as we speak and then we have to  
8 decide what we are going to do with how Congress may change  
9 those in the NG and in the NGS.

10 Regulated parties for electricity -- these are  
11 things we are reviewing, we are not necessarily going to  
12 change, credits for diesel and electricity in non-road  
13 vehicles, what type of metering we need to get generated  
14 credits, how Low Carbon Fuel Standard will work as part of  
15 the cap-and-trade program that may be developed under AB 32,  
16 a fee schedule for people making applications for new  
17 pathways, reevaluate the efficiency values for natural gas  
18 heavy duty, and also efficiency values for all vehicles and  
19 their fuels. Ongoing commitments, participate in the  
20 environmental review of the specific projects, continue  
21 collaborations with other government agencies, here  
22 nationwide and around the world. To actually adopt the  
23 regulation, we have to finish what is called a Final  
24 Statement of Reasons, which means we have to put out all the  
25 regulatory language changes. This week, we should put out

1 the last of that, it will be for a 15-day comment. This  
2 will include additional fuel lifecycle pathways for  
3 biomethane from various sources, some of the biodiesel  
4 pathways from waste, but it is not all of them. We will  
5 probably have one for storing biodiesel put out for a  
6 separate comment period later this month.

7           And the goal is, by the end of October, submit for  
8 the Office of Administrative Law the Administrative Record,  
9 at which we will respond to all the public comments  
10 received, and some are over about 2,000 pages at the moment,  
11 so that in itself is a monumental task. And that will allow  
12 for the actual adoption by the Office of Administrative Law  
13 by the end of December, which allows us to start the  
14 regulation in January of 2010.

15           In summary, we are going to get 10 percent by  
16 2020, we feel emissions from land use changes are real and  
17 may be positive, but also depends upon the type of crop  
18 being grown and how that plays out on the grow wide scale.  
19 Compliments, goals set by the federal mandates and we are  
20 looking for extending the program beyond 2020. And that  
21 completes my presentation. Thank you.

22           MR. OLSON: Dean, this is Tim Olson. I would like  
23 to ask you a question here. [Inaudible] is what a producer  
24 qualify for any -- part of this, your answer may be we have  
25 not thought about this, and though I am not at the details

1 yet, but is any credit being contemplated for producers  
2 that -- of the fuel -- of the biofuels?

3 MR. SIMEROTH: I am not sure what you mean by  
4 credits. Do you mean that there is biofuel that has less  
5 carbon intensity than the referenced gasoline or diesels?

6 MR. OLSON: No, I meant from a cap-and-trade  
7 standpoint, will there be any potential crediting prior to  
8 the kind of roll-out of the Low Carbon Fuel Standard?

9 MR. SIMEROTH: No credits can be generated until  
10 January 1<sup>st</sup>, 2011, that is in the regulatory language of the  
11 regulations. Starting January 1<sup>st</sup>, 2011, credits can be  
12 generated, credits can be exported out of the Low Carbon  
13 Fuel Standard to other applications. No credits can be  
14 imported into the Low Carbon Fuel Standard, but we can  
15 export credits out under the proposed regulatory language.

16 MR. OLSON: Do you have any idea what that value  
17 might be for any of the repeat stocks?

18 MR. SIMEROTH: You mean monetary value or --

19 MR. OLSON: Yeah.

20 MR. SIMEROTH: No. Not at all. I would not even  
21 want to guess.

22 MR. MCKINNEY: Okay, well, thank you very much,  
23 Dean. And thanks to the Air Resources Board for making you  
24 available. Both the LCFS is easily a full day workshop, if  
25 you have not attended one of those proceedings at the CalEPA

1 building, and as are some of the questions that came up in  
2 Ysbrand's discussion, that could easily be a full day  
3 discussion, as well.

4           So we want to transition out of the introductory  
5 phase of this and to the first set of panels, and what we  
6 are going to do is ask the first set of panelists to come up  
7 here. We are going to remove ourselves back to the dais,  
8 and then we have got an agenda change, so Pacific Ethanol is  
9 not able to attend today. Dolores Santos of NELLA and  
10 Calgren will be our first speaker, so I will ask Ms. Santos  
11 to go straight up to the podium microphone, and Pilar will  
12 give her presentation, and if we could have Bob Walker, Dave  
13 Rubenstein, Brian Pellens, Fernando Garcia, Michael Redimer,  
14 and Eric Bowen all come to this table, we would very much  
15 appreciate that.

16           MS. BAROODY: And time-wise, we are running about  
17 15 minutes behind, so we will try to -- if we can keep the  
18 presentations to about 15 minutes, that would be very  
19 helpful. Thank you.

20           MS. SANTOS: Good morning. My name is Dolores  
21 Santos. And I am the Director of Supply and Distribution  
22 for NELLA Oil Company. Before I start my little speech  
23 today, I am also representing Calgren Renewable Fuels, and I  
24 am happy to report that we are back in production. We  
25 started back up August 10<sup>th</sup> and we are producing about

1 110,000 gallons a day of Ethanol. We are hoping by the end  
2 of this year to be up to our capacity at that plant, and we  
3 produce about 50 million gallons a year of Ethanol there.

4 NELLA Oil Company is a large multi-branded jobber  
5 serving Northern California and Northern Nevada. NELLA  
6 ships petroleum products to six pipeline terminals in  
7 California, and we also own and operate two product pipeline  
8 terminals in Northern Nevada. We own retail and commercial  
9 fueling sites, also known as cardlocks in these markets. As  
10 a marketer, we sell unbranded fuel to other jobbers from the  
11 distributor that the terminal reps, and we also deliver to  
12 customers using our fleet of trucks. NELLA has been forward  
13 thinking at finding ways to incorporate alternative energy  
14 into our business model. NELLA has partnered with the State  
15 of California in their E85 program, and we currently operate  
16 two E85 stations in the Sacramento area. NELLA also  
17 operates a large solar energy program that has solar panels  
18 located on most of our retail sites and our headquarters  
19 office. Our solar program allows us to use solar generated  
20 electricity for our stations. And when we generate more  
21 power than we consume, it is sent back to the electric grid,  
22 lowering our overall use and cost of electricity from the  
23 grid. NELLA is very committed to alternative fuels and we  
24 have made a large financial investment in Calgren. We are a  
25 25 percent owner in Calgren Renewable Fuels located in



1 Pixley. Although this is a corn ethanol plant and our  
2 feedstocks come from the Midwest, we produce a lower carbon  
3 ethanol than that from the Midwest due to the fact that we  
4 use natural gas and a co-gen unit to provide steam and  
5 electricity for our plant. We also avoid drawing our  
6 distiller's grains. We can further lower our carbon rating  
7 at the Pixley plant by displacing natural gas with dairy  
8 gas. Mr. McKinney and Mr. Van der Werf have addressed this  
9 and I do not want to bore you too much, but I do have a  
10 little summary that Matt Schmitt has prepared, and I want to  
11 touch on it now just to explain the process of the biomass  
12 recovery. As I mentioned, we have a 50 million gallon a  
13 year ethanol plant in Tulare County. At full production, we  
14 will produce volumes based on a 10 percent blend rate,  
15 roughly equal to 3.5 percent of the California state ethanol  
16 requirement. Our project represents over \$120 million in  
17 private investment and we have 40 full-time jobs there. Our  
18 ethanol plant, which is the only one in production right  
19 now, is one of the lowest carbon facilities in the country  
20 for producing fuel that is 15-20 percent less carbon  
21 intense. Calgren, in particular, is compared to other  
22 plants in California around the country with providing low  
23 carbon fuel pathways, due to the process of electricity and  
24 steam produced 100 percent by natural gas-fired on on-site  
25 co-generation, where most plants draw their electricity from

1 the grid and steam from industrial boilers. We require  
2 3,000 MMBtu per day, or 3 metric cubic feet of natural gas  
3 per date operate. We have the opportunity to displace over  
4 50 percent of our natural gas requirement with renewable  
5 biogas recovered from over 50,000 milk and dairy cows over  
6 large dairy farms located within 10 miles of this plant. I  
7 want to show you where we are located. Oh, there. That is  
8 our ethanol facility. How do I go to the next page? I am  
9 not an engineer and I am certainly not a scientist. Matt  
10 put together some information here about biogas that would  
11 be produced from covered manure, waste lagoons located at  
12 the dairy farms, with the potential of 1,500 MMBtu per day  
13 production, as outlined below. I really do not know how it  
14 works, but I did want to present that to you.

15           The biogas would be collected at low pressure  
16 through a series of lateral pipelines connected to each  
17 covered lagoon, would feed into a main pipeline that would  
18 run along the county and right-of-ways. The pipeline would  
19 be made of high density polyethylene and designed for  
20 capacity to transport up to 3 million cubic feet per day of  
21 biogas. The main pipeline can entail up to 15 miles of pipe  
22 running 10 miles east and west, and five miles north to  
23 south. Gas processing crude biogas arrives at the co-  
24 generation plant under low pressure and will contain  
25 approximately 60 percent methane, 40 percent CO<sub>2</sub> and 2,500

1 PPM hydrogen sulfide.

2           In summary, one of the most efficient ways to  
3 lower the lifecycle of GHG emissions in California fuels is  
4 to blend California gas with low carbon ethanol. Existing  
5 corn ethanol plants in California are the lowest carbon  
6 plants in the country, that produce ethanol with lower  
7 carbon intensity than CARBOB. Modified existing ethanol  
8 plants in California, to be more energy efficient and use  
9 renewable processes, will lower the lifecycle of GHG  
10 emissions for California fuels. The Calgren dairy biogas  
11 project has the potential to replace 50 percent of its  
12 processed energy with a renewable energy source that would  
13 produce an ethanol pathway with a lifecycle GHG emissions  
14 rating below sugarcane ethanol imported from Brazil. The  
15 Calgren biogas project is development ready and requires  
16 only fully proven commercial technology. This is just a map  
17 of where our plant is, where we would propose to put the  
18 pipeline, and we are within 10 miles of the dairies, it  
19 makes perfect sense. Calgren recently went through an  
20 extensive upgrade at the Pixley plant to improve our  
21 production, and one of these upgrades was to install a de-  
22 oiler to recover corn oil generated in the ethanol producing  
23 process. This has allowed us to produce a better quality  
24 distiller's grain, and in the process we now have corn oil  
25 that could be produced into biodiesel. This gives us the

1 best utilization of our feedstock and will allow us to  
2 create yet another biofuel to displace overall fossil fuel  
3 consumption in our market. Investment in biodiesel plants  
4 that can turn corn oil into biodiesel makes good sense. I  
5 am not an engineer, but what I just described looks to be a  
6 valuable inroad to using products readily available to us to  
7 reduce our dependence on fossil fuels.

8           What we now need is the money to get these  
9 projects going and improve the state's infrastructure to get  
10 these products to the consumer. As a marketer, I can tell  
11 you that the current infrastructure in our state is not  
12 conducive to getting these alternative fuels to the market  
13 competitively. Spending money on our aging infrastructure  
14 would go a long way to getting these products to market  
15 efficiently so we can compete with fossil fuels. We need to  
16 be able to create storage for alternative fuels like  
17 biodiesel at pipeline terminals so we can efficiently load  
18 and deliver these products to the consumer. We currently  
19 have E5 with just two cardlocks in our Bay Area sites. We  
20 recently spent over \$60,000 to upgrade three existing  
21 underground tanks in our South San Francisco bulk plant so  
22 we could store V99 biodiesel. We still have to move that  
23 biodiesel three times from rail car to truck, from truck to  
24 bulk plant, and then again when we splash blend the  
25 biodiesel at our bulk plant, and the nearest pipeline

1 terminal route just to get it to one of the sites. If the  
2 infrastructure described were in place, NELLA would have E5  
3 biodiesel made from corn oil, extracted while producing  
4 ethanol at the Calgren plant, and in all of our stations.  
5 Our consumers want to be green, but not if the price of the  
6 alternative fuel is much higher than fossil fuel. Reducing  
7 the number of times it is handled will greatly help lower  
8 the cost to get it to the consumer.

9 In summary, I just want to point out that we need  
10 to develop fuel production facilities that use waste  
11 material as feedstocks, increase the number of E85 fueling  
12 stations, and provide projects for existing biofuel plants  
13 that reduce energy consumption and displace fossil fuel use,  
14 projects for existing biofuel plants that create higher end-  
15 value byproducts such as corn oil and biodiesel and  
16 biochemicals. Thank you for your time.

17 MR. MCKINNEY: Great. Thank you very much,  
18 Dolores. I have two brief questions. I think generally we  
19 are going to hold questions to the end, but I do have two  
20 brief questions for you. First, without divulging any trade  
21 secrets, can you talk about how you were able to get the  
22 Calgren plant back up and running at this point in time?

23 MS. SANTOS: Well, we shut the plant down in  
24 November. We had some construction issues that affected our  
25 evaporation unit, and we needed to do some work on that, and

1 at the time the economy did not support producing ethanol,  
2 so it was a good time to shut down. So we spent several  
3 months improving the evaporation process and producing the  
4 ethanol, and then we also installed our de-oiler. The  
5 economics look pretty good right now, and we were able to  
6 bring it back up.

7 MR. MCKINNEY: Congratulations. The second  
8 question is, when you talked about tapping biogas from local  
9 dairies, what are the next steps that need to happen there,  
10 from your point of view?

11 MS. SANTOS: I am not really sure exactly what is  
12 involved, but I believe we need the funding. I think the  
13 process is going to be fairly easy to accomplish, Matt  
14 Schmitt can speak more about that. I think we just need the  
15 funding to get that going. We are willing to invest more  
16 money to make that happen.

17 MR. MCKINNEY: Yeah, and I think, as Peter  
18 mentioned, we do have the new biomethane solicitation will  
19 be coming out. Well, thank you very much.

20 MS. SANTOS: Anymore questions?

21 MR. OLSON: Yeah, I have a couple questions, and  
22 part of this may be -- it might be good to have an  
23 individual meeting with you to go over some of these costs.  
24 For us, to determine how much to allocate, and then for what  
25 purpose, we have got to have a pretty good rationale. And

1 that means we have got to know something about costs and  
2 why you cannot cover it with private money at this point.  
3 I think we want to know, as Jim pointed out, more about the  
4 dairy farm project -- is it just a one-off project? Or, is  
5 there replication potential on that kind of thing? This  
6 kind of question will be for all panel members as we hear  
7 from you.

8 MS. SANTOS: We are very close to the dairies and  
9 so it makes it economical for us to bring that biomass into  
10 our plant. We currently use natural gas. We see it as a  
11 good fix to displace that natural gas with the biogas. But,  
12 again, I am not an engineer and I really cannot answer that,  
13 but I could put you in contact with Matt Schmitt.

14 MR. McKINNEY: Okay, well, again, thanks very  
15 much, Dolores. We appreciate your time and coming here to  
16 make that presentation.

17 MS. SANTOS: Thank you.

18 MR. McKINNEY: So next up, we have Mr. Bob Walker  
19 of Swan Biomass, who has some interesting technologies to  
20 discuss with us. Biomass, for some extra time, I can give  
21 you 20 minutes, Bob. So hopefully that will make it work,  
22 and I will be calling out the 10-15 minute mark to keep you  
23 on track.

24 MR. WALKER: Okay. You know that I have that kind  
25 of a problem. But thank you. Boy, it is very good to be

1 following a positive presentation like the previous one  
2 where people are actually out making progress and have  
3 concrete goals.

4           What I have done is put together a two-part  
5 presentation, one, the background issue was something I  
6 thought would be useful because there are a lot of people  
7 involved in the discussions that we are having, and these  
8 are comments that are supposed to be about the fuels  
9 projections that we had a couple weeks ago, tasked us around  
10 them, the rat is following the snake, but the background  
11 issues grew and grew and grew as people took a look at this  
12 thing, so I will be spending more time on that.

13           Now, one of the things that was requested was a  
14 concern about Swan competing with people who are going to be  
15 producing ethanol using its technology, and we are not going  
16 to be doing that. We are a facilitator technology, we  
17 provide rights, and we are going to avoid wherever possible  
18 any [inaudible] operate, maintain operations. We also  
19 support work of qualified engineering firms chosen by the  
20 Licensee, so it is really the Licensee's vein after they  
21 take the license, they have to make it work and we will  
22 help.

23           Now another question I came up with, "Where is  
24 your pilot plant?" And Swan has more pilot plant experience  
25 than anyone else in the private sector and does not need



1 another pilot plant, thank you very much. We ran NREL's  
2 pilot plant for five years, we have worked for others  
3 contract which meant that NREL did not see the data derived  
4 for another two years, and we are into the support  
5 technology for support of an industry as opposed to  
6 developing the industry. And much of the work on the pilot  
7 plant was based on feedstocks obtained in California. We  
8 used wheat straw, barley straw, oat straw, rice straw, which  
9 they are half way between waste and co-product. Sometimes  
10 you can get money for them, sometimes you cannot. The major  
11 effort we have today is in sugar and energy cane, and we  
12 tested that. We have also tested other feedstocks that are  
13 similar to those that are found in California and therefore  
14 will have a benefit to an expanded use of waste in  
15 California, various types of hardwoods, and we looked at  
16 that as an ingredient to short rotation in woody crops, wood  
17 waste, fire break use, we would like to see some people get  
18 involved in that, orchard waste, and other agricultural  
19 waste. We also have looked at post-sorting MSW residuals  
20 and are able to handle them. The economics are not quite as  
21 good as some people would like to have yet, but we are  
22 working on that, as well. We also spend a significant  
23 amount of time on corn fiber, that is the solid part of  
24 DDG's, and that is going to be important for taking those  
25 corn-based facilities that are still reasonably economically

1 healthy, and working them into being able to process more  
2 cellulosic feedstocks.

3           Now, the breadth and complexity of these  
4 feedstocks, the depth of the assessments that we brought,  
5 allows us to very quickly take a new feedstock. One of the  
6 things that we have seen is, for instance, cotton gin  
7 thresh. We can take that and run a certain series of  
8 analyses on it and be able to predict what a plant would  
9 look like economically and physically, actually, if it was  
10 processing out feedstock. We have looked at sorghum and we  
11 are very interested in looking at some of the sorghum work  
12 that is going on in California today. Really, the  
13 commercial demonstration, bio refinery, is the next step, we  
14 have a process design package that has been prepared with an  
15 FEL3 level of accuracy; that kind of accuracy is plus or  
16 minus 10 percent on the capital. We have licensees involved  
17 in permitting, and one of them is about 90 percent finished  
18 with the permitting. The real kicker right now is funding  
19 resources. We are working very hard on that and there is  
20 some novel creations to try to get past the financial crisis  
21 so it will come to present -- the mandate for cellulose-  
22 based ethanol has made this step a very urgent one.

23           This is the graph that the Energy Commission put  
24 together in its discussion a few weeks ago and it shows a  
25 slight dip in the corn-based, starch-based part of the

1 ethanol production in about 2015 and, at that point in  
2 time, the cellulosic part is starting to take off.

3 MR. MCKINNEY: Okay, Bob, we had a comment on  
4 WebEx, if you could speak a little more directly into the  
5 microphone, please? It sounds like some of the WebEx folks  
6 are -- and I do not know if there is a way to boost volume  
7 on that mic or not.

8 MR. WALKER: Well, one way last time, pick the  
9 thing up and walk with it around. Is that a little bit  
10 better?

11 MR. MCKINNEY: Perfect. Thank you, sir.

12 MR. WALKER: Okay, well, the preliminary  
13 conclusions of the initial study was that the supply of and  
14 demand for starch was going to fall out and cellulosic was  
15 going to grow based on the fair share principals reaching  
16 about 13 -- well, 123 billion gallons by 2022. This gross  
17 could accommodate about 13 or 14 bio refineries, each with  
18 100 million gallons per year, and that is a pretty  
19 reasonable thing to be able to put out in a 12-year  
20 timeframe. The launching of a Swan bio refinery may alter  
21 these forecasts. And I am going to go through some brief  
22 economics. They are not of the activities in California  
23 today because we have confidentiality agreements that we  
24 have to observe, so I have made up some prototypes that are  
25 analogous to the kinds of things that can be done in

1 California.

2           And this, just straight up the blue line shows  
3 even a change of the price of fuel ethanol and dollars per  
4 gallon, and the green lines are showing the DCF-ROI's for  
5 projects that are running on our technology. Now, where the  
6 diamonds are is where the market is today, and 20 percent of  
7 the starch-based systems in the country are in mothballs,  
8 they cannot practice at that level. But we are saying that  
9 we can practice down around \$1.00 to \$1.10 and get adequate  
10 survivable economics. Now, this is about the same as what  
11 Brazil is capable of doing, so that you already will have a  
12 system where you can produce ethanol in California, that if  
13 it were produced in Brazil would be quite competitive, and  
14 you would have a differential, transportation problems that  
15 were discussed at length a couple weeks ago, in getting  
16 ethanol from Brazil to here. So it is making the cane-based  
17 ethanol look more and more attractive for the state.

18           MR. MCKINNEY: You have got ten minutes to go.

19           MR. WALKER: Okay. Same thing here, only I put it  
20 on a GGE basis, same effect, \$1 a gallon to \$1.50. Same  
21 thing for wood waste and that is another thing that is  
22 looking attractive in California. And again on the GGE  
23 basis. So the tentative conclusions now are that cellulose-  
24 based ethanol will grow very profitably once initial bio  
25 refineries are established. Marginal corn-based ethanol

1 facilities will be shut down, encouraging the construction  
2 of more cellulose-based facilities in order to keep the  
3 demand met. The cycle will continue until only our wet mill  
4 appreciated efficient dry cornmeal-based facilities survive  
5 and we will work with those people to convert them to  
6 cellulose. This is what the new breakdown on what the  
7 gallons per year are likely to look like. The light green  
8 is things that have been taken out of the starch-based  
9 facilities and put into the cellulose-based facilities, so  
10 instead of having 12-14 facilities to build, you have really  
11 22-24 facilities to build if you want to maintain this  
12 capacity in the state.

13           One of the things that is most interesting about  
14 this is the private sector will not need help or a mandate  
15 under this scenario. It is the pursuit of profit that can  
16 be the driving force. After the first facility is put up,  
17 it is a profitable operation, people will come, and they  
18 will build these things. The increase can be handled easily  
19 by the construction strategy that our engineering firms have  
20 set up, which is basically an assembly line for modules to  
21 build up the capacity in the state, so we can -- as long as  
22 we get involved quickly -- we can do it. So California has  
23 an opportunity to extend its ethanol capacity and meet  
24 demands, and to warrant -- cede that which it does not fill  
25 to low-cost ethanol from domestic or foreign sources because

1 our licensees are already exploring other places where they  
2 can develop additional capacity. If the challenge is met,  
3 it can result in a substantial number of new jobs or saved  
4 old jobs.

5           A quick thing here on where the bio refineries  
6 should be located, and I will just move to -- this is a  
7 picture of it. They should be in the places where the  
8 feedstock is, shipping the condensed product to places where  
9 it is being consumed. Now, you can ideally build around  
10 each of the bio refineries a community that can use more E85  
11 vehicles than they can currently in the cities, and that  
12 will be the most efficient way to build the capacity within  
13 the state. The bio refineries located near the Arizona  
14 border can help with some of the problems that Kinder Morgan  
15 is talking about the last couple of weeks ago. GHG based on  
16 a Greek analysis, we have a superimposed version of the  
17 graph you saw earlier, this graph you saw earlier, and if  
18 you put cellulosic ethanol from California cane on our  
19 model, and this is third plant along the series of  
20 development, it actually runs negative. It is greenhouse  
21 gas reductions. Now, the way we have done this is also  
22 possible to convert -- use to convert all the other similar  
23 cellulosic ethanol to greenhouse gas negative producers,  
24 i.e., vacuum cleaners, taking carbon dioxide out of the air.  
25 So the hard part is get it done physically. We all, under

1 the Energy Commission's leadership, need to determine if  
2 the goals and forecasts presented are generally endorsed  
3 and, if not, what production should be made, and then, under  
4 CEC's leadership, we need to define a path that will  
5 successfully and efficiently -- and efficiently is going to  
6 be critical here -- reach our refined view of the future.

7 MR. MCKINNEY: All right, five minutes.

8 MR. WALKER: Okay. And this is what a 1222 bio  
9 refinery might look like for you. So thank you for your  
10 time, and you have an extra five minutes.

11 MR. MCKINNEY: Very good. Thank you very much,  
12 Bob. Very interesting presentation. Any questions.

13 MR. OLSON: I have one question. Bob, I wonder if  
14 you would clarify your slide where you refer to 22-24 plants  
15 would be needed -- could be built at 100 million gallons  
16 capacity per year, and that it would not need state  
17 investment for mandate. So prior to that, can you just  
18 provide some insight on where you think government  
19 investment should be placed?

20 MR. WALKER: Well, first of all, it has to be  
21 placed upfront because you need to get that first facility  
22 up and running, and just taking a look at one of these  
23 curves, the green line is the DCF-ROI, so that at \$1.70, you  
24 would be able to make about 55 ROI on one of these projects.  
25 That will bring people to the door. And so you no longer

1 need to have each and every plant that is coming along have  
2 to have its special kick in the pants to get up and running,  
3 it is just in that first one.

4 MR. OLSON: And the nature of that investment, do  
5 you see that as -- what do you expect the capital costs of  
6 these plants to be?

7 MR. WALKER: Okay, the first one is going to be  
8 expensive because it has got a lot of redundancies and extra  
9 safety things and other stuff, so that is going to be about  
10 \$160 million for a three million gallon per year facility;  
11 the next one is probably going to be \$120 million, the next  
12 set, that will be very profitable. But we should have a  
13 cost per annual gallon down to about \$3.00 a gallon by the  
14 time we get to the third of the series.

15 MR. OLSON: So I guess at some point we would like  
16 to hear from you, given that we do not -- we are not going  
17 to have \$160 million for -- total --

18 MR. WALKER: Well, yes.

19 MR. OLSON: -- for what you think would be a  
20 reasonable rationale for this government investment, and  
21 what is a reasonable amount that would make a difference on  
22 a \$160 million plant.

23 MR. WALKER: Okay, well --

24 MR. OLSON: You do not have to answer now, that  
25 might be at some point.



1           MR. WALKER: I hoped to have had some more  
2 definitive insights into that, but right now the  
3 negotiations are going around between \$20 and \$50 million is  
4 the total for getting the system running. And basically  
5 that is an escrow account for covering debt servicing.

6           MR. McKINNEY: Okay, thank you very much, Bob.  
7 Next up, we have Dave Rubenstein with California Ethanol and  
8 Power (CE&P).

9           MR. RUBENSTEIN: Good morning. I want to thank  
10 the Commission for allowing me to be part of the panel  
11 today. My general direction on what I have to speak about  
12 is going to go kind of along the questions that were  
13 presented to us with the e-mail received last week, so  
14 hopefully it is going to answer some of the questions that  
15 staff is looking to answer. I believe that at times the  
16 state has not been, and can be, if possible, a little bit  
17 more accommodating to ventures who are working in the  
18 renewable energy space, such as us. Currently, California  
19 Ethanol and Power has received absolutely no assistance from  
20 any local, state, or federal agency in our effort to build  
21 our first facility. I know that I read it, and I am sure  
22 many others have read about, state assistance to companies  
23 who are sexy like Tesla Motors, yet we have not seen any of  
24 the kind of assistance from the state that they received at  
25 this point.

1           In our case, we know that each one of our  
2 facilities will deliver an extremely low carbon fuel grade  
3 ethanol, green electricity, and biogas to the citizens of  
4 the state. Se will create jobs, we will help the economy,  
5 and we will reduce California's need for imported oil. All  
6 of this will come from sugarcane, which will be grown here  
7 in the State of California by the citizens of the State of  
8 California. It will be a sustainable, a reliable, and a  
9 profitable crop for area farmers, land owners, and the folks  
10 working within the region. I strongly believe that our  
11 project is one that should be funded through AB 118. I am  
12 sure there are other companies who also deserve funding  
13 through AB 118 and I am pretty excited to hear about them  
14 over the next two days.

15           We are all in this together, as far as I am  
16 concerned. I love living in California and we love the  
17 clean environment and the standards that have been set, and  
18 look forward to passing them down to my children, and  
19 reducing the need for foreign oil is very important, in my  
20 mind anyway. I do not think that -- there was a comment in  
21 one of the questions about the modest amount of money that  
22 has been raised today at the \$176 million, and to me that is  
23 not a modest amount, that is a significant amount of money  
24 that could be used very effectively to get projects done.  
25 In our particular case, what we would like to do is borrow

1 the money, not necessarily take it as a grant, but borrow  
2 it, and we would like to use those funds to help finalize  
3 the development of our first facility.

4           In our case, at this point, we have had many  
5 discussions with private equity firms who are extremely  
6 interested in picking up the equity portion of our first  
7 facility, but that is a little bit further down the road, we  
8 are still in the development stage. We have also identified  
9 a Department of Energy Program that is a part of the  
10 American Recovery and Reinvestment Act that would guarantee  
11 the entire debt of the project of our first plant. But,  
12 again, that is a little bit further down the road. As far  
13 as development costs go where we are at right now, we need  
14 to raise a total of \$15 million. Most of that cost, about  
15 80 percent, is being used for either the agricultural, the  
16 permitting, or the engineering costs. So far, we have  
17 raised \$6 million from friends and family. We were hoping  
18 to raise anywhere from \$1-4 million under AB 118, and then  
19 the balance of the development funds, we think would come  
20 from the potential equity participants in the first plan  
21 because that participation at the development stage would  
22 allow them to have the right of first offer to actually pick  
23 up that equity stick. We think this is a true  
24 public/private way of financing the facility and, when it  
25 all balances out, if we are able to obtain any state or

1 federal type funds, we think it is going to be pretty much  
2 80 percent private, 20 percent public. The interesting  
3 thing, too, is we intend to pay all the money back of AB 118  
4 money, back to the state with interest. And that would be  
5 done at financial close when we begin to start to build the  
6 first plant. Another -- some more help that would also come  
7 from the state would be helping firms like us and the  
8 farmers we are working with to attain funding from the  
9 federal BCAP program, which is part of the last Federal Farm  
10 Bill. BCAP stands for the Biomass Crop Assistance Program  
11 and is designed to help the farmers grow crops that will be  
12 used to support facilities like ours, and it takes into  
13 consideration the ramp up time to get to that point.

14           You talked about the structure of AB 118. We all  
15 know that grants are better than loans. We all went to  
16 college and I think that is one of the first things we  
17 learned, so getting a grant is terrific, but also being a  
18 citizen of the state and understanding the budget crisis  
19 that we have gone through, we fully understand that, at this  
20 point, it would probably be best if we could borrow the  
21 money from the state through this fund at a low interest  
22 loan. We would pay it back at financial close when we begin  
23 construction of the first facility. The idea behind this is  
24 that the original investors, like myself, who were the first  
25 money in and took the most risk at getting this project

1 together, would get their investment back at financial  
2 close. It would be great that, since the state cannot take  
3 ownership stake in the fund, we could pay the state back the  
4 loan with interest. And then, an even better plan would be  
5 to take that money and then redeploy it as a loan guarantee  
6 on top of the federal guarantee, so if we are going to  
7 guarantee 80 percent of the entire project at this point  
8 with DOE, it would be nice to get another 10 or 15 percent  
9 loan guarantee on a subordinated debt. It would just make  
10 things a lot easier to get it all the way through. My  
11 personal incentive, as being one of the founders and  
12 investors in this program, is to give the state the money  
13 back because, the same day, I am going to get my investment  
14 back, as well, and at this point, it is pretty substantial.  
15 So I am sure my kids will appreciate that, as well. And  
16 then, once the loans are -- and our thought process then  
17 would be that, once the loans and loan guarantees are all  
18 extinguished and retired and finished, it is great because  
19 the money could then stay within the state, it could be  
20 redeployed for other projects like ours, other ones, better  
21 ones, and we could kind of send out like an ongoing  
22 endowment for the state that could continue to keep the  
23 state going where we are at.

24 Another question that came up was talking about  
25 bidding away projects to other states. And, as mentioned,

1 we have not had any financial assistance from California on  
2 our project at this point. My reaction to that would be to  
3 take care of the California companies that are doing this in  
4 the state, and not try and lure other people at this point.  
5 I think the talent and the opportunity is terrific already.  
6 And in our case, for instance, you know, folks from Arizona  
7 and Nevada have contacted us to see if we would be willing  
8 to do this in their states, and at this point we are  
9 dedicated to stay in California, but a little bit of help  
10 would be great.

11 I had an animation here of what we think the first  
12 plant will look like and I will keep going through some of  
13 the questions here and see if it works, hopefully this will  
14 load up. I think we were discussing the cellulosic issue,  
15 which is very important, and we have a tendency of skipping  
16 over the generation and a half, which we are at, at this  
17 point. In our case, what is going to end up happening is we  
18 are going to squeeze the sugar out, turn it into ethanol,  
19 and we will have all this biomass available. So once the  
20 cellulosic process becomes available, we are down to a  
21 significant amount of biomass that could be used to convert  
22 into additional ethanol product. At this point, our thought  
23 process is it would be used for cattle feed, or it could be  
24 used for another biomass energy plant that we could use to  
25 combust to create green electricity. It is a significant

1 amount, as well, so it could create up to another 50  
2 Megawatts of green electricity because we handle over  
3 300,000 bone dry tons of product. If we could get this  
4 project funded at this point, we could break ground in less  
5 than a year. We are into the permitting process. And we  
6 could be operational one and a half years later, so in  
7 reality we could have a plant up and running in three years.  
8 We are confident that once the plant is, 1) underway, we  
9 could be into facility 2, 3, and so on. We believe that the  
10 Imperial Valley can support three to four facilities, and  
11 the Palo Verde Valley can support one. I am sorry, I do not  
12 have the animation working, but we could send that to  
13 anybody, or you can go and visit our website and you will  
14 see what the first plant should look like.

15           Five facilities can produce approximately 330  
16 million gallons of low carbon fuel grade ethanol based on  
17 current gage usage in the state, and figuring a 10 percent  
18 blend rate, that would be enough to supply about 20 percent  
19 of California's ethanol needs, and it would be extremely low  
20 carbon fuel, as well. I already mentioned that any  
21 cellulosic technology that comes through, we could put that  
22 on the back door and turn all that biomass into additional.  
23 Our capital costs are much different than a traditional  
24 ethanol facility, and even facilities that operate in  
25 Brazil. In reality, what we would be doing is building four

1 industries. We are going to be building the low carbon  
2 ethanol plant, we will be building a renewable energy power  
3 plant, a biogas plant, and an agricultural operation from  
4 the ground up. So saying that it costs a dollar, \$2.00, or  
5 \$5.00 a gallon to build, it is not applicable to our  
6 development. The cost is more than it would be to build in  
7 Arizona or Nevada because of California's stringent air and  
8 water regulations, as well as working through seismic  
9 issues. We do not consider these problems, as we all want  
10 to live in a clean environment, there are simply hurdles  
11 that need to be addressed and paid for. We do not think  
12 there will be a need to import feedstock. Our detailed  
13 models show that local farmers and landowners can profit  
14 handsomely by growing their cane for our facility. Our  
15 detailed models indicate that they will make more money per  
16 acre than they currently make growing field crops. They  
17 will have a guaranteed market for the crop, they will be  
18 reimbursed all costs associated with growing the sugarcane,  
19 and the sugarcane will be planted and harvested by CE&P.  
20 Our model will reduce the costs and risks associated with  
21 the farmers trying to figure out what crops should be  
22 planted each year, and hoping and praying that the market  
23 for that crop is available at the end of the growing season.  
24 CE&P suggests a fast track permitting process and, in our  
25 case, allow us to perhaps build a larger power plant that



1 will consume the extra biomass while keeping the permitting  
2 the same, as if it were an under 50-Megawatt facility. We  
3 also urge the CEC to fund projects based on performance,  
4 rather than technology classifications. So if our end-  
5 product reduces greenhouse gas emissions in a sustainable  
6 and reliable manner, then we should be eligible for funding  
7 and it should not matter if we are cellulosic, or not. Our  
8 detailed agricultural and financial models indicate that we  
9 can produce low carbon fuel grade ethanol here in  
10 California, using the cane grown in the state, for less than  
11 \$1.50 per gallon, and once the debt is retired, the cost  
12 would drop below \$1.00. I want to thank the Commission  
13 again for allowing me to present.

14 MR. MCKINNEY: Great. Thank you very much, David.  
15 That was a very interesting presentation. I have one  
16 question for you. I guess I understand the kind of  
17 different steps you were talking about, a lot of them are  
18 financial, to get your first plant up and running, but could  
19 you summarize that for me again, please? Maybe I missed  
20 something. How far are you, do you think, from doing the  
21 permitting work on your initial plant? Where are you in  
22 that process?

23 MR. RUBENSTEIN: The permitting, we stopped. We  
24 had a problem with our first piece of property, so we  
25 actually have another piece of property located. We are

1 ready to go. Quite honestly, we need investment at this  
2 point. We have raised \$6 million to date, \$2 million has  
3 come from Management and our contractor, another \$4 million  
4 has been raised through friends and family, kind of ran out  
5 of friends and family at this point. We think --

6 MR. MCKINNEY: And then are your feedstock users  
7 -- would that be within your company structure? Or would  
8 those be contracts or local growers?

9 MR. RUBENSTEIN: A combination of both. We have  
10 been working with five berry farmers and I am going to tell  
11 a little bit more about that in tomorrow's panel; they have  
12 bought into the program and they will be shareholders with  
13 the new development company, as well.

14 MR. MCKINNEY: Okay, thank you.

15 MR. OLSON: David, I have a question also. I  
16 wonder if you -- the \$15 million, what would you get with  
17 that? What would be the capacity of that plant?

18 MR. MCKINNEY: The \$15 million is really the  
19 blueprint to build the first plant that could be then  
20 duplicated to build the plants afterwards. The \$15 million  
21 will then be fully applied towards the \$555 million to build  
22 the first plant. So that \$15 million, as mentioned, 80  
23 percent of it is going to the development of the  
24 agricultural side, as well as the permitting side, and the  
25 engineering side. And that will eventually become part of

1 the overall \$555 million.

2 MR. OLSON: I think that would be helpful to break  
3 that into stages. And this is a comment for all the panel  
4 members to understand. If we place \$1 or \$2 million, what  
5 are the time frames to see things happen? What are those  
6 steps that we might be funding? And how is our investment  
7 -- which may be in that range, \$1, \$2, \$3, \$4 million per  
8 project -- what will that lead to in the various time  
9 frames? That might come from one or more liens, if you are  
10 open to that.

11 MR. RUBENSTEIN: Yeah, if you do not mind, I could  
12 answer that briefly. In our case, just to give you an  
13 example, is that the \$6 million has gotten us from June 1<sup>st</sup>  
14 of '07 until today, \$1-2 million will get us probably to the  
15 end of this year when the private equity folks that we are  
16 talking to would then fund the balance of it, and then they  
17 would take the equity lead in the first plant. So it is  
18 kind of a bridge to the next level.

19 MR. OLSON: Thank you.

20 MR. MCKINNEY: Okay, again, thanks very much,  
21 David. Next up we have Brian Pellens with Great Valley  
22 Energy. Good to see you again, Brian. I think Brian and  
23 his partner have learned some tough lessons over the last  
24 few years trying to put together funding and process  
25 technologies for their proposed facility.

1 MR. PELLENS: Hi, I am Brian Pellens, Great  
2 Valley Energy. I appreciate the opportunity to address the  
3 Commission today. I am not going to talk about the problems  
4 that we have had. What I am going to talk about today is a  
5 little bit about where we have been and where we think we  
6 are going to go in developing a template for in-State  
7 production of biofuels, feedstocks, and in-State production  
8 of biofuels.

9 Great Valley Energy was founded in 2006, it is  
10 majority owned by Californians, originally slated to be a  
11 destination plant of corn and grain sorghum to ethanol. Our  
12 project site is in Hanford in the Kings Industrial Park, it  
13 is in an enterprise zone, just re-upped to 2023. The  
14 permitting was officially deemed complete and completed, and  
15 beyond reproach and challenge in March of 2009. Our  
16 settlement with the Attorney General's Office and the  
17 Association of Irrigated Residents encourages GVE to  
18 evaluate and switch to advanced biofuel feedstocks. So now  
19 it is permitted. Now what? You know, since we started down  
20 this road, corn ethanol has really been squeezed down,  
21 crushed down so to speak in the lingo, and I have got some  
22 information on that. But cellulosic, as we see it, has not  
23 yet been proven on a commercial scale. We see, you know,  
24 the economy in turmoil? We are here, I think, on the  
25 anniversary of the fall of Lehman Bros., project finance is

1 still limited. You know, corn ethanol -- the economics are  
2 dictated by externalities, both corn and ethanol are traded  
3 in accordance with crush spread, and the market really  
4 brings out any kind of profit that one might get. This  
5 graph here is the crush spread over the course of the last,  
6 oh, four years, and that is the margin that is available  
7 after you buy the corn, and after you sell the ethanol. And  
8 what we see here is that, through the period later 2008, we  
9 have got crushed spreads that are down near a quarter, a  
10 quarter gallon, and that is not enough to buy the energy and  
11 pay the people to run these facilities. And,  
12 coincidentally, we have seen some increase in that margin,  
13 which has allowed some corn facilities to come back up  
14 online, which is great.

15           The limiting factor for California, and this is  
16 kind of important, is the number of cows within an  
17 economical trucking radius for distiller's grains, that is  
18 going to dictate how many facilities like this you can have.  
19 Without fractionation upfront, and I am glad to hear that  
20 Calgren is doing that, a corn ethanol facility has two  
21 products, ethanol and distiller's grains. Here, we have the  
22 Renewable Fuels Standard and existing capacity as it has  
23 come online, we see that we have got about 12.5 billion  
24 gallons per year of corn-based ethanol in production. Under  
25 the RFS, we really do not need any new corn plants and, as

1 additional corn production and corn ethanol production  
2 might be allowed under the RFS, it will be met by existing  
3 facilities. So any new ethanol production in the state  
4 should be focused towards advanced biofuels and cellulosic.

5           We have been evaluating sweet sorghum as a  
6 feedstock for probably the past 18 months and it qualifies  
7 as an advanced biofuel under the RFS, it is leading edge,  
8 not bleeding edge, so to speak, it does not have an impact  
9 on the corn market. It will grow well, not just in the  
10 Imperial Valley, and I would echo a lot of the comments that  
11 were made just before me, but it will also grow well in the  
12 Central Valley and on marginal soils and, interestingly, can  
13 be front-end fractionated. Sweet sorghum has a couple of, I  
14 guess, layers that you could peel through. One is the very  
15 outer layer, the epidermal layer, which is called Dermax,  
16 and it contains a lot of natural acids and bioactive  
17 compounds, which are very high value. The comrind is a  
18 woody outer material that, as I could show, we could make  
19 good building products out of, and then a comfith, that  
20 middle pithy part, is what contains the juice, and also some  
21 soft cellulosic material. This next slide shows some of the  
22 products that can be made out of a fractionated sweet  
23 sorghum. On the upper right-hand side, we see we can make  
24 out of the outer portion some lumber materials oriented  
25 stramit board, in the middle there we have got wax and

1 pharmaceuticals, and further on down the bottom there, with  
2 the middle comfith, the pithy part that we squeeze the juice  
3 out of, we can make particleboard, a high fiber flour  
4 material, that part would go toward animal feed and could be  
5 used as a fuel to power the process. And then, finally,  
6 what we are all interested in is the juice can be fermented  
7 directly into ethanol. So we can fractionate it, so what?  
8 Anyway, the thing is, the more products you can make out of  
9 your raw materials, the more income streams you have, the  
10 greater economic stability your plant has, and the industry  
11 has as a whole. This allows flexibility to adjust when the  
12 market changes, it is a foundation for further optimization,  
13 for example. We are going to have a lot of cellulosic  
14 material, as Mr. Rubenstein said. Right there at the plant,  
15 we have already paid the freight on it, so when it is  
16 available, when the technology is available, we will be  
17 ready for it. And this is really right in line with the oil  
18 refinery model. Oil refineries make lots of products, they  
19 do not just make gasoline, they do not just make diesel,  
20 they make LPG, they make waxes, they make fertilizer, and  
21 they can change production based on the market economics  
22 that day. If it makes more sense to make diesel, they are  
23 going to make more diesel.

24           So what we are really shooting for is an  
25 integrative model, a bio refinery that is flexible and

1 squeezes every last calorie out of feedstock. This is from  
2 the national renewable energy laboratory. I am sure most  
3 folks have seen this at the bottom of the slide, I have got  
4 a diagram of some of the products from the syngas, you can  
5 see that, through various catalytic processes you can make  
6 diesel and gasoline, mixed alcohols, any sort of -- any  
7 number of products. So, as we are going to hear tomorrow,  
8 more, sweet sorghum is a low water, low fertilizer, and it  
9 grows fast, even in marginal soils, which is great for the  
10 Central Valley. We would be looking at probably 2-acre-feet  
11 per acre. A lot of crops there grow with twice that much  
12 water and they would not have nearly the economic impact.  
13 We expect that, based on that 90-day cycle with the soil  
14 temperatures that we see in the Central Valley, we are going  
15 to get two or three crops, at least two crops. In a good  
16 year, if the frost stays off, we will get three crops. And  
17 that crop is going to be uncoupled from the commodity  
18 markets. Importantly, it keeps the economic benefits in  
19 California, growing purpose-grown energy feedstocks. We  
20 will not be shipping that money back to the Midwest, we will  
21 keep it here so it can further sustain our agricultural  
22 communities. It is the low carbon, low energy way to make  
23 ethanol. We do not have to cook the starch and the corn to  
24 get it to sugar so that it can be fermented. Importantly,  
25 this is scalable. You know, we could see maybe 20, any



1 number of these facilities, I guess at this point  
2 advocating the small is beautiful mentality, and building  
3 out biofuels infrastructure. We do not need big huge  
4 plants, we can do smaller plants and spread them out across  
5 California. We would probably find a limit with the  
6 economic trucking distance for sweet sorghum. Based on our  
7 modeling, we see sweet sorghum ethanol being very comparable  
8 with corn at this point, and that is not taking into account  
9 any value added for the co-products.

10           So, as we have evaluated sweet sorghum, we have  
11 several questions, you know, that we still have in our mind  
12 that would need to be answered as we move forward, and I  
13 guess this is where we would like to see some help from the  
14 Commission in helping us address some of these questions.  
15 For example, while sugarcane separation and fractionation  
16 technology is a proven practice -- not here in the U.S., but  
17 there are countries that do this -- sweet sorghum has not  
18 been processed in that manner and, you know, we question  
19 whether it is going to behave the same and that is going to  
20 get into the technology risk that an investor or a debt  
21 provider would have to take on. We still do not have a good  
22 understanding what the true economic values in the Central  
23 Valley, or the California economy, or the non-ethanol sweet  
24 sorghum fractions, and that goes to the feasibility study  
25 that we would need to complete. You know, one of the great

1 products that would come off of this is the food grade wax  
2 and we should be able to find a ready market for that here  
3 in California.

4           It is possible that we could use treated waste  
5 water for irrigation, we just wonder how that might affect  
6 the yield, and imagine that we have got crop studies that  
7 are going on currently that we should hear about tomorrow,  
8 but we think there is potential to use treated waste water  
9 to grow the crops.

10           One of the issues with sweet sorghum and sugar  
11 crops in general is that they have to be processed within 24  
12 hours, otherwise, through biological activity, the sugars  
13 start to degrade on their own, and we need that to happen  
14 when we want it to happen. And so we imagine that we should  
15 be able to schedule sweet sorghum harvest just like tomato  
16 processing, so that we will go out and harvest the material  
17 and bring it to the plant every day.

18           We have a number of regulatory questions that, you  
19 know, would add another layer of uncertainty to this whole  
20 process, one of which is how sweet sorghum would be treated  
21 under the indirect land use changes for the Low Carbon Fuel  
22 Standard. And then, also, how the non-fuel products would  
23 be treated under well to wheels lifecycle analysis. Does,  
24 for example, the building material count towards carbon  
25 sequestration?

1           At this point, we have got a site ready to go, we  
2 have got a business model, a process that conceptually has  
3 been proven out in other countries, and through technology  
4 transfer, we can imagine how we could fit all of this  
5 together. We do not currently have a plant that is  
6 optimized for California, engineered and ready to go, we do  
7 not know what final products of that engineering would be.  
8 In addition, there is technical and logistical risks for the  
9 overall process value chain that need to be addressed, so  
10 there is still quite a bit of work here for us to be done.  
11 Finally, I would add that permitting new biofuels projects  
12 can be lengthy and complex and risky. We have been doing  
13 this for three years now. And we just got our permits  
14 earlier this year, so it is pretty tough out there. You  
15 know, frankly, anybody that does not agree with exactly what  
16 you are going to do and wants to influence how you are going  
17 to do business, if they have got \$350, they can pretty much  
18 stop you in your tracks, so...

19           Some recommendations. We see this process as  
20 being commercial in the near term. I know that there is a  
21 lot of work going on in cellulosic, we think that is great.  
22 We applaud the efforts. And we will be ready for it. This  
23 is here now. We can grow these crops today, they grow well  
24 here. There is nothing stopping us from fermenting sugars  
25 to ethanol. In addition, we would expect that an optimized

1 and properly characterized plant using sweet sorghum would  
2 show greenhouse gas reductions right along the line of  
3 sugarcane and some cellulosic plants, depending on how it is  
4 all configured. We need a feasibility and market study of  
5 the fractionated sweet sorghum process. That is something  
6 we think the Commission would be able to help us with. That  
7 would serve as a template for other facilities as we roll  
8 this through California. We also need preliminary  
9 engineering which would go into the feasibility study and  
10 for financing, and with that, it will give us a gauge for  
11 capital requirements. We would expect this to be no more  
12 expensive than a comparably sized corn plant. We are not  
13 going to have some of the process vessels, but we will still  
14 have fermentors and we will still need distillation and that  
15 sort of thing, and then we will have some feedstock  
16 preparation, as well. Like I said before, we are going to  
17 have technology risks here, there are not any plants that we  
18 could point to that a loan provider would be able to take  
19 comfort in, in providing us money. So we would need some  
20 sort of a loan guarantee to take the place of a performance  
21 guarantee, which is going to be difficult to procure at this  
22 point. There is my contact information and, if there are  
23 any questions, I would be happy to try to answer them.

24 MR. MCKINNEY: Great. Thank you very much, Brian.  
25 I am very glad to see that you and Ed still have your chins

1 up and looking forward to getting through some tough  
2 roadblocks there. And also, I know a lot of us here on the  
3 EFTO staff have been very very interested in the potential  
4 for sweet sorghum, so I would like to sit down with you at  
5 some point and just learn more about what you have learned  
6 through your investigations and trials. I know we are  
7 hearing a lot about that tomorrow, as well.

8 MR. PELLENS: Sure.

9 MR. OLSON: Brian, I have one question. Can you  
10 use your permits for your existing site in Hanford for  
11 sorghum feedstock?

12 MR. PELLENS: Yes. We have legal counsel,  
13 especially on that issue, and we have been assured that the  
14 environmental footprint that we have permitted there --  
15 well, let me take a step back -- we have basically an  
16 environmental footprint that is permitted in Hanford, and so  
17 this modified process would have to stay below that, and if  
18 not below that, not create anymore or any new significant  
19 impacts.

20 MR. OLSON: The footprint is based on the  
21 destination corn model?

22 MR. PELLENS: Destination corn model, 60 million  
23 gallons per year.

24 MR. OLSON: Do you have any thoughts of -- is it  
25 possible to do a plant that might have a mixture of

1 feedstocks? Does that even make any sense?

2 MR. PELLENS: Yeah, it does. You know, we have  
3 considered that, as well, but for all the reasons -- well, I  
4 am assuming you are referring to corn, a mixture of corn and  
5 sorghum? You know, for all the reasons I cited why corn is  
6 difficult right now, those are the reasons that I would not  
7 really propose to do anymore corn production capacity.

8 MR. MCKINNEY: Okay. Again, Brian, thank you very  
9 much for your time and interesting presentation.

10 MR. PELLENS: Thanks.

11 MR. MCKINNEY: We are going to switch gears now.  
12 The morning speakers have focused on ethanols and the last  
13 three speakers for this panel are going to be talking about  
14 renewable diesels and biodiesels. And first up will be Mr.  
15 Fernando Garcia from Amyris in Emeryville.

16 MR. GARCIA: Well, good morning. And I would like  
17 to thank the CEC for providing this opportunity to speak. I  
18 will go through a couple of slides to provide a background  
19 or explanation of our company very quickly and our fuel  
20 technology, and then get into the issues that are  
21 challenging to bring the fuels to California.

22 Very quickly, Amyris Biotechnologies, we are based  
23 here in Emeryville on Bay. The company was founded with a  
24 Gates Foundation Grant on the order of \$20 million, which  
25 did prove the technology and is now providing a scalable

1 supply of less expensive anti-malaria Armenesin, which is  
2 curing the disease worldwide, so the technology has been  
3 proven in a commercial state. We are pioneering yeast  
4 technology, enabling the productions of more than 50,000  
5 hydrocarbon molecules, so clearly beyond just hydrocarbon  
6 fuels. The new strain of yeast turns sugar into  
7 hydrocarbons instead of ethanol, so we are renewable diesel  
8 and not a biodiesel. The technology is feedstock agnostic.  
9 The product portfolio that we currently are pursuing is, of  
10 course, diesel fuel, jet fuel, and a wide range of chemicals  
11 that are currently addressed by petrochemicals. We have  
12 marketing and distribution channels to deliver the products  
13 in the United States and other global markets. We have an  
14 ethanol trading group, a small trading group in Chicago,  
15 which principal goal is to establish our distribution  
16 channel in the United States.

17           Switching to the Amyris renewable diesel just very  
18 quickly, I just highlight it for chemical properties of the  
19 diesel fuel, first Cloudpoint in comparison to the metal to  
20 biodiesel, and 2) ultra low sulfur diesel. You see that our  
21 fuel is superior in cold Cloudpoint, which has been a prong  
22 with biodiesel, which does start gelling at a plus degree  
23 range. Our fuel has not clouded yet at minus 50 C which is  
24 the limit of the ASTM test procedure. We look to the right  
25 top, energy density. You see that our energy density is

1 very comparable to petroleum diesel. Lower left, the  
2 cetane number, you see we have a very superior cetane number  
3 on the order of 58.6. And in aromatics, particularly here  
4 in the state of California, aromatics is a low regulated  
5 property in the fuel composition, and you will see that we  
6 have a far superior aromatics compared to the CARB fuel, in  
7 addition to EPA fuel. We are currently registered with EPA  
8 at a 20 percent blend with ultra low diesel.

9           Our fuel is fully complying with the ASTM D975, so  
10 it meets all the specifications of petroleum diesel. It is,  
11 as a result, being a hydrocarbon fuel and fully satisfying  
12 D975, it is fully compatible with existing distribution,  
13 storage, and engine technologies. Third-party demonstration  
14 demonstrated lower NO<sub>x</sub>, HC, CO, and particularly matter  
15 exhaust emissions, tailpipe emissions. Through a project  
16 contract that LCA contractors, it has been demonstrated that  
17 our fuel has a 100 percent reduction in lifecycle emissions,  
18 and that is direct lifecycle emissions versus petroleum  
19 ultra low sulfur diesel. We have conducted and continue to  
20 do preliminary road validation with light duty and medium  
21 duty vehicles. And perhaps most important in the State of  
22 California, the technology is capable of utilizing future  
23 California energy feedstock such as sweet sorghum,  
24 sugarcane, and also taking advantage of in-State cellulosic  
25 biomass such as rice straw when volumes become available.



1 We anticipate that, once we establish our core technology  
2 of sugarcane that the conversion, or the re-engineering of  
3 our yeast, our microbes, to other feedstocks would be on the  
4 order of less than 12 months.

5           Just a quick note on GMM, being it is a yeast, the  
6 host microbe is a yeast generally recognized as safe, which  
7 is the GRAS rating by U.S. EPA, which is commercially used  
8 today for beer, wine, bread-making, animal feed, and other  
9 consumable products. Other genetically modified yeast is  
10 similarly used in commercial applications for human use, as  
11 you see there. The yeast contains non-toxic, non-allergenic  
12 genes, which is introduced in a highly stable manner.  
13 Again, it is safe for human handling based on third-party  
14 risk assessment. And live GMM would not be released in the  
15 environment under our technology.

16           As far as capabilities of the technology, Amyris  
17 production capabilities, we do have a pilot plant in  
18 Emeryville. We have an additional pilot plant in Brazil.  
19 We have a demonstration plant which just came online in  
20 Brazil just last month. We have been producing additional  
21 volumes in California through tolling. We use the term  
22 "tolling," that is leasing fermentation facilities in  
23 California. We are targeting commercial production  
24 capabilities in Brazil for 2011 on the order of 34 million  
25 gallons per year, and then that would even increase with

1 additional plant and additional optimization of those  
2 plants in 2012.

3           As far as issues, market issues, on the subject of  
4 government policy, issues that need to be addressed is  
5 streamlining the process for Low Carbon Fuel Standard  
6 pathway certification, efficient bio refinery plant  
7 construction permitting, the issues that were just discussed  
8 prior to my talk, the availability of loan guarantees for  
9 in-State bio refinery construction, as also discussed  
10 earlier this morning. Infrastructure -- infrastructure and  
11 importation of our diesel fuel to California's access to  
12 port terminals, and access to distribution storage  
13 facilities, which are very critical issues that need to be  
14 addressed. As far as on the order of biomass feedstock, as  
15 also explained this morning, a bio refinery must be located  
16 near available sugarcane feedstock; once again, agricultural  
17 stock has to be available due to the short shelf life, if  
18 you will, of sugarcane, availability of in-State feedstocks  
19 such as sweet sorghum and, again, discussed just prior to my  
20 discussion.

21           Commercial production, the challenges that we have  
22 is cost-effective hydrogen sourcing. Our process is taking  
23 the precursor and hydrogenating it into the hydrocarbon  
24 compound of diesel specification, so a cost-effective  
25 hydrogen sourcing is a challenge. Production scaling and

1 R&D, we have established the microbe technology, but we do  
2 now have to go through the science, if you will, the R&D of  
3 scaling up to commercial levels. The challenge there is  
4 microbe survival in an industrial environment, improved  
5 yield rates at production scales, optimization of feed rate,  
6 greater efficiencies and the liquid-liquid separation. I  
7 should mention that our renewable diesel is far less energy  
8 intensive in the separation versus ethanol. Our current  
9 processes simply use centrifuges that are used in the dairy  
10 industry today, there is nothing special in our separation  
11 needs. Hydrogenation process requirements need to be  
12 optimized. Process cost controls, and then non-destructive  
13 materials compatibility testing, these are the challenges  
14 that remain to make to reach a commercial production level.  
15 And then, lastly, the other challenge is acquiring OEM  
16 engine and a vehicle warranty acceptance, and that is best  
17 achieved by providing a robust on-highway demonstration.  
18 Those are the challenges.

19 As to what is our ask -- our ask through the 2010  
20 and 2011 Investment Plan cycle is grant funding for  
21 production and scaling of R&D and demonstration program  
22 through other proposals we have put together with fleet  
23 operators in California, we look at about a \$.28, \$.29  
24 million in the contract production, that would be contracted  
25 to fermenters' facilities, production scale of the size you

1 see in that graph in-State, a diagnostics and measurements  
2 of the on-highway program, and then, of course,  
3 administration of project management for a total of just  
4 under \$3 million. Project expenditures will be fully  
5 expensed with in-State fermenters' scientific analysis,  
6 diagnostics, and chemical processing. And lastly, the  
7 deliverable, it would be renewable diesel production for 20  
8 percent blend, it would provide sufficient quality for a 12-  
9 month program to fuel medium to heavy duty vehicles in the  
10 state. And that is my presentation.

11 MR. MCKINNEY: Okay, well, thank you very much,  
12 Mr. Garcia. Very very interesting and good status report,  
13 too. Do you have any questions, Tim?

14 MR. OLSON: No, but for the overall panel.

15 MR. MCKINNEY: Okay, thanks very much.

16 MR. GARCIA: Thank you.

17 MR. MCKINNEY: Next up we have Michael Redimer, if  
18 I am pronouncing that right, with Community Biofuels.

19 MR. REDIMER: Good morning. Thanks for the  
20 opportunity to speak before the staff of the Energy  
21 Commission. My name is Michael Redimer. I am with  
22 Community Fuels, we are a biodiesel manufacturer located at  
23 the Port of Stockton. This is our facility. It is a 10  
24 million gallon a year plant. We can expand up to 80 million  
25 gallons per year at this footprint. I will just give you a

1 quick background. We completed the plant in 2008, it is  
2 based on a proprietary design and it is focused on producing  
3 quality biofuel from multiple feedstocks. One of the big  
4 things we are concerned about is product quality and what  
5 the customer wants, and I think that is a really important  
6 dimension to this whole emerging industry. If we are not  
7 satisfying our customers, we are all in trouble. So we have  
8 a complete lab there where we perform our quality assurance.  
9 We do not sell directly, generally we like to sell through  
10 the existing fuel infrastructure system, so we sell through  
11 distributors.

12           So, what are the market demands? Well, high  
13 quality. Some early missteps in the industry created some  
14 problems, some image and reputation problems, and we are  
15 living through those now, and coming out the other side.  
16 Processing technologies have gotten better, there is still  
17 room for improvement. But there is a lot of variability.  
18 Favorable blend economics -- the feedstocks have been about  
19 80 percent of our cost structure. When diesel prices drop  
20 and feedstock prices go up, we have got a big problem, and  
21 we are all aware of that. So there is a sensitivity of that  
22 spread.

23           And finally, for our customers, convenience and  
24 availability -- and I know Dolores Santos with NELLA  
25 mentioned storage, intermediate storage for our

1 distributors. They are many times reluctant to convert  
2 tanks from existing service to a biofuel when there are no  
3 customers, and customers cannot get the fuel until those  
4 tanks are available, so there is a chicken and the egg.  
5 Retail locations are important, to get more stations  
6 providing biodiesel. And finally, fuel performance, whether  
7 it is biodiesel, ethanol, it has to perform for the customer  
8 at least as well as the existing fuel, otherwise we are all  
9 going to have a problem. So those are things I would  
10 encourage you to consider.

11           So industry challenges. Well, access to capital,  
12 and we have heard a little bit about that, to expand  
13 existing capacity, and we are interested in expanding our  
14 capacity as the market continues to grow. And then,  
15 finally, infrastructure. And others have mentioned access  
16 to marine transport, pipelines, storage and blending  
17 equipment at terminals, and additional retail.

18           So the other challenges. Uncertainty in the  
19 regulations and the increased perception of risk by  
20 potential investors. The complexity and uncertainty of both  
21 the low carbon fuel standards and the renewable fuel  
22 standards have contributed, I think, somewhat to the  
23 unwillingness of people to invest in this space right now,  
24 and will continue to be a problem until we get all this  
25 stuff sorted out. So, to the degree we can get these things

1 fixed and settled, we will all be better off. You know,  
2 the whole issue with the underground storage tanks and the  
3 Regional Water Board, it was, again, sort of a dissonance  
4 within the whole state policy area. And then, finally,  
5 administrative burdens, having to get a variance to sell  
6 biodiesel at the retail level through the Department of Food  
7 and Ag, these are all things that are impediments to  
8 deployment. Increased capital costs due to these delays and  
9 perception of greater risks, lack of coordination between  
10 state and federal agencies creates more complexity and  
11 uncertainty, and frankly provides a competitive advantage to  
12 the existing incumbents in the fuel industry, which is kind  
13 of ironic.

14           So what are the critical market issues, the  
15 technology and policy area? Well, clear regulations  
16 regarding biodiesel storage are going to be important,  
17 consistent warranties -- I know there was a mention on  
18 manufacturer warranties for B20 is an area that needs some  
19 work. Recognition of diesel fuel engine efficiency benefits  
20 -- I know the current policies -- I do not see where the 30  
21 percent inherent improvement in efficiency in diesels is  
22 being reflected in the state policy. It seems like the  
23 consumers' interest is in how many miles per gallon, and not  
24 how many grams of carbon dioxide per megajoule of energy  
25 they can consume, and I think we need to consider as an

1 integrated system the vehicle technology and the fuel. And  
2 I would encourage you to think about those things. And  
3 then, finally, alignment of some of these different policies  
4 and positions between both federal government and the state  
5 government.

6           So what types of projects in the next cycle?  
7 Well, grants for increased production capacity would be one  
8 area. I think somebody mentioned front-end retrofits for  
9 pre-treating some of the more problematic feedstocks because  
10 the feedstock can have an impact on fuel quality, and that  
11 is important. Grants for demonstrating new technologies in  
12 that area.

13           So what is the appropriate level of state funding  
14 or financial risk that state should take relative to the  
15 private sector? Well, some sort of private sharing for  
16 costs of projects. Somebody mentioned loan guarantees,  
17 those would be appropriate. Focus on projects that are  
18 going to deliver quantifiable results. We think that is  
19 very important, that there is accountability and performance  
20 associated with anything -- any taxpayer monies that are  
21 focused in this area.

22           And then the level of risk assumed by the state  
23 will be driven in part by the level of regulatory risk  
24 perceived by the capital markets, so maybe there is an  
25 inverse relationship there of some kind.



1           What are the preferable funding mechanisms?

2   Well, project funding with some loan guarantees, or grants,  
3   or a combination. And, again, funding for actual results,  
4   not good intentions.

5           Is it necessary for California to bid away  
6   projects from other states? No, if the regulatory  
7   uncertainties are resolved in the state, and preference is  
8   implemented for in-State production, we think that is not  
9   necessary. Support current state production before bringing  
10  in more capacity -- existing plants are already below  
11  capacity or, in many cases, idle.

12           How quickly can alternate lower carbon intensity  
13  feedstocks be phased in? And, again, we think it is very  
14  important to maintain a focus on the customers so that we  
15  have got high quality product going into the market,  
16  otherwise, the market will disappear, so that has to be  
17  something we need to think about as we are moving to other  
18  feedstocks. The policy should not dictate winners and  
19  losers with respect to feedstocks to the degree that it can  
20  be neutral, to create a framework in which a lot of  
21  different feedstocks can play. And then, finally, new  
22  feedstocks are constantly being identified, a lot of talk  
23  about camelina sativa right now being grown up in the  
24  Northwest for biodiesel. We need to be realistic about the  
25  volumes and the commercial timeframes for a lot of these

1 because it always takes longer than you think it will.

2           Why are California diesel plants under-producing?  
3 And what are the prospects? Well, there is a lack of in-  
4 State demand right now. We need to increase our sales, not  
5 production right now. By increasing demand, the sales and  
6 margins are going to improve automatically, so that will  
7 again attract increased product production. I am not going  
8 to comment on the renewable diesel question, that is kind of  
9 out of our area.

10           How do project and capital costs for in-State  
11 biofuels production compare relative to other states? Well,  
12 due to the more -- and somebody mentioned permitting  
13 requirements -- we think it takes about 30 percent more  
14 capital in about a year's time to build a plant here in  
15 California as opposed to Nevada or somewhere else. That is  
16 significant. We chose to build here because of some other  
17 reasons, but that is significant and I think it is something  
18 that ought to be examined if we really want to develop a  
19 biofuels industry here in the state. Essentially, biodiesel  
20 plant is the chemical plant and we need to have, obviously,  
21 good stewardship in where those are located. They are not  
22 going to be in shopping centers, they are going to need to  
23 be permitted and located in an appropriate area.

24           What role could or should imported feedstocks play  
25 in meeting the in-State production? Again, to maximize

1 energy security, we think that domestic in terms of U.S.  
2 produced feedstocks are the most desirable. In-State  
3 production is great if it can work. I think the economics  
4 need to work and I know a lot of folks find that right now  
5 and we are certainly interested and have used in-State  
6 feedstocks. Potential solutions beyond AB 1811 program  
7 investments are needed to increase in-State production.  
8 Focus on demand. What do the customers want? That is  
9 really important. Make sure you have got that right before  
10 you deploy any technology or any fuel into the market. And  
11 if demand is consistent, production will follow.

12           How can we make California production competitive  
13 with imports such as Midwestern corn or out-of-state --  
14 reduce conflicts of complexity of the state regulations,  
15 create policies that have a preference for renewable fuels  
16 that are produced in-State, support in-State producers  
17 through grants and loan guarantees, and then force stringent  
18 fuel requirements again to make sure the customers are  
19 happy. That concludes my comments. I will be happy to  
20 answer any questions, and thank you very much.

21           MR. McKINNEY: Great. Thank you very much,  
22 Michael. That was very informative. I have one question.  
23 When you talked about the current lack of consumer demand,  
24 what do you see are the needed steps and limiting factors in  
25 growing that demand?

1           MR. REDIMER: I think a couple of areas, one is  
2 some consumer education because a lot of people just are not  
3 really aware of biodiesel. I think the ability to have this  
4 in more retail stations would be helpful, so more  
5 infrastructure for its distribution. I know -- I think  
6 Dolores mentioned they are putting in some tanks for  
7 biodiesel, but we need to get more of that from our  
8 perspective because right now we are limited by that in  
9 terms of how we push our product out in the market.

10           MR. MCKINNEY: So you see kind of a need both at  
11 the wholesale distribution phase and at the retail marketing  
12 phase?

13           MR. REDIMER: Yes.

14           MR. OLSON: Michael, I have a question. This is  
15 Tim Olson. So in your comments about the need for grants  
16 and loan guarantees, are you referring just to production  
17 plants or also blending and storage terminals?

18           MR. REDIMER: I think it would cover blending and  
19 storage terminals if they were dedicated for biodiesel, you  
20 know, that would have to be worked out, but certainly I  
21 think that would help some folks out there that are looking  
22 at getting into that, but they do not want to take the risk  
23 of converting an existing tank or something, to be able to  
24 put a new tank in.

25           MR. OLSON: And if we could do some of those types

1 of things, and the existing dollar per gallon federal  
2 production credit is still available, is there a need for  
3 anything else, any other kind of production credit, or  
4 anything like that at the state level?

5 MR. REDIMER: I think the -- I mentioned some  
6 front end processing technology improvements to try to help  
7 deal with a variety of different feedstocks is an area that  
8 could be supported, or should be looked at. I think at this  
9 point, getting clarity on the Low Carbon Fuel Standard and  
10 how it is going to kick in, and what that is going to mean  
11 in terms of the biodiesel market, getting clarification on  
12 that is important.

13 MR. OLSON: Okay, thank you.

14 MR. WARD: Thank you, Michael. Well done. I have  
15 one question. You mentioned specifically the need for  
16 funding for pre-treating feedstocks. Can you describe what  
17 that means?

18 MR. REDIMER: Yeah. Basically, the feedstocks to  
19 some degree determine some of the product quality  
20 specifications, things like cloudpoint, there are other  
21 attributes, and I think there are some technologies that are  
22 emerging out there that can help pre-process some of those  
23 things more cheaply, and get higher production from those  
24 feedstocks, so you do not lose as much in the process. I  
25 think those are areas worth looking into and worth support.

1           MR. WARD: Which feedstocks are you speaking  
2 about pre-treating?

3           MR. REDIMER: Well, things like waste vegetable  
4 oils, animal fats, some of those areas where you are going  
5 to have a much higher cloudpoint if you are processing those  
6 through traditional, conventional means.

7           MR. WARD: Great, thank you. And also, thank you  
8 for addressing all the questions we --

9           MR. REDIMER: Well, I tried. I did it in 15  
10 minutes.

11          MR. WARD: You did a good job.

12          MR. REDIMER: Thank you very much.

13          MR. MCKINNEY: Thanks again, Michael. Our last  
14 speaker on this morning's panel will be Mr. Eric Bowen from  
15 the California Biodiesel Alliance.

16          MR. BOWEN: Good morning, everyone. And, Michael,  
17 thank you for making my job easy. My name is Eric Bowen. I  
18 am the Chairman of the California Biodiesel Alliance, CBA is  
19 the industry's trade association here in California. My day  
20 job is as president and CEO of Tellurian Biodiesel, so I am  
21 here as an industry representative who actually works in the  
22 industry and not as an employee of the trade association.  
23 Biodiesel Alliance is really a culmination of producers,  
24 feedstock suppliers, technology developers, it is a large  
25 tent we have been representing industry here in California

1 and the California industry back in D.C. since about 2006.  
2 There are really two key things I want to make sure, and  
3 make sure staff at the Commission comes away with today, one  
4 is what is the current state of the biodiesel market because  
5 it is rapidly changing, and I think it is important for you  
6 to understand where the industry is today and why, and then,  
7 two, with the limited resources that the state has, and in  
8 particular with AB 118, what can the CEC do to help the  
9 state achieve its renewable fuels goals. So let me do a  
10 quick recap of what we think is the waste biodiesel  
11 opportunity, and I have had this conversation with many of  
12 you, but Peter in particular.

13           We know from Dean's presentation this morning,  
14 significant greenhouse gas reductions on the magnitude of 85  
15 percent, compared to ultra low sulfur diesel. Biodiesel is  
16 available today, this is a commercially available product  
17 with over 10 years of market experience here in the United  
18 States, and crucially in California included. The biodiesel  
19 blends are compatible with existing fuel and infrastructure  
20 and vehicles. The no new vehicles, no new infrastructure  
21 required, and we know from a feedstock perspective, from a  
22 waste feedstock perspective, it is about 100 million gallon  
23 per year opportunity here in California, alone. And as a  
24 quick footnote, sort of one of the things that just dawned  
25 on me from Gary's presentation this morning, was there is

1 also about 100 million gallons of installed biodiesel  
2 capacity, so an interesting match here. Not all of those  
3 plants are in the right places, and not all of those plants  
4 should be credited to run waste feedstocks, but an  
5 interesting situation where a match of feedstocks that are  
6 not being utilized to its full potential, and biodiesel  
7 plants that are not being utilized to their full potential.

8           So let's move a little bit to the state of the  
9 industry, and I have broken this down to two categories. It  
10 goes without saying the industry is going through incredibly  
11 challenging times, and I broke them down into the national  
12 issues and then California specific issues. So let's start  
13 with the national issues. Industry is in complete freefall.  
14 From a production standpoint, the industry is contracted by  
15 about 50 percent this year. There is about 750 million  
16 gallons produced in 2008, and we are on a run rate to do  
17 about half of that, or 350 to 400 million gallons in 2009.  
18 Needless to say, that is a major major contraction. Even  
19 last year when things were by comparison good, and we were  
20 on three or four years of two to three X growth rate year  
21 over year, we had an industry utilization rate nationally in  
22 biodiesel of about one-third. So with a contraction of 50  
23 percent, and additional plants coming online, you can see  
24 that one-third utilization rate, which was already  
25 atrocious, is now just about double digits, barely. We are



1 in the low teens in the industry utilization rate. That  
2 has caused about 75 percent of the plants in the nation to  
3 be shut down or idle, by number. Most of those have gone  
4 bankrupt or are out of business, some of them are getting  
5 picked up through bankruptcy options. So why is all this  
6 bloodbath going on when, you know, you would think that  
7 there should otherwise be a healthy biodiesel market out  
8 there? Well, the underpinning of demand was intended to be  
9 RFS2, the second version of the Federal Renewable Fuel  
10 Standard that created for the first time a specific bucket  
11 for biodiesel, or what they refer to as biomass-based  
12 diesel, 500 million gallons in 2009, this year that we are  
13 in, growing to a billion gallons by 2012. Well, for a whole  
14 variety of reasons that we do not have time to go into,  
15 those regulations have not been implemented, and the current  
16 thinking coming out of Washington, D.C. is we will be lucky  
17 if we get visibility into when they will be implemented,  
18 some time the middle of next year, with likely  
19 implementation in 2011. And there is a colossal battle  
20 going on between the petroleum industry and the corn ethanol  
21 industry, EPA, Congress about how we are going to measure  
22 greenhouse gases, and how that implements and affects RFS2.  
23 The bottom line is what was intended to be sort of a safety  
24 net for the biodiesel industry has been removed and is not  
25 coming back any time soon. Second is, the one dollar tax

1 credit and, Tim, I think you made reference to this a short  
2 while ago, currently said to expire at the end of this year.  
3 If it expires, that will be yet another bullet for the  
4 industry. It will likely get extended, I can say with a  
5 very high degree of confidence it will get extended.  
6 Whether it gets extended in time for a lack of interruption  
7 starting January 1, 2010, 50/50 at this point. And it will  
8 likely also get restructured from a blender's credit to a  
9 producer's credit, and I will not go into what that is,  
10 but... So the investment community that invested in ethanol,  
11 invested in biodiesel, lost all of their money. They are  
12 not looking to pour money back in, and they are all sitting  
13 on the sidelines waiting for how this shakes itself out.  
14 That is the national sentiment today in biodiesel.

15 California is a bit of a different market. It has  
16 a bit of its own challenges, in addition to the national  
17 challenges. So the underground storage tank issue was made  
18 reference to earlier, hopefully you are aware of that, I  
19 will not go into details, happy to follow-up offline if you  
20 are interested. Let's spend a moment on this wholesale  
21 distribution issue, which some of the questions last time, I  
22 think, were poignant on this point. The biodiesel markets  
23 nationally that function probably best looked at in, say,  
24 Illinois and Minnesota is two examples. And why do they  
25 function there? Minnesota, because it has a B2 mandate,

1 every gallon has to have two percent. And Illinois, there  
2 is a large state tax incentive, so it is cost-effective to  
3 blend at least 11 percent biodiesel into every gallon of  
4 diesel. That caused upstream changes in the petroleum  
5 industry where virtually every bulk transfer station, every  
6 terminal, every rack has biodiesel storage and biodiesel  
7 blending capabilities. That allows biodiesel to get to the  
8 end user, which is mostly heavy duty vehicles, trucks, and  
9 busses, at a cost that is comparable to petroleum diesel.  
10 Without that type of infrastructure, what we do here in  
11 California today is what Dolores mentioned, which is to go  
12 maybe to a local plant and trucked in, or it is rail carted  
13 in, and then it has got to get dumped into someone's truck,  
14 and then it goes to someone's bulk plant, and then it gets  
15 blended with petroleum diesel, and then it goes to the end  
16 customer. That adds anywhere between \$.15 and \$.50 a  
17 gallon. Now, that is not an easy thing for biodiesel to  
18 remain competitive after that penalty, that logistics  
19 penalty and actually to compete effectively with petroleum  
20 diesel.

21           What else is going on? Well, that price bullet,  
22 that is what is driving the price problem, mainly. There  
23 are two issues -- high cost feedstocks with soybean oil and  
24 then the lower cost feedstocks, the waste materials which  
25 are cost-effective, but for this logistics problem.

1           Low Carbon Fuel Standard -- and I wish Dean were  
2 here because I would harass him yet again, I have been  
3 talking to him for ages now about the slow ramp and how the  
4 slow ramp does not serve renewable fuels and biodiesel well.  
5 The ramp that he has will not absorb current biodiesel usage  
6 until around 2013, 2014, that is silly, that is not an  
7 incentive. All of these things are causing scale problems,  
8 again, in order for plants to be productive and have good  
9 economies of scale, they really need to be 10, 20, 30  
10 million gallons per year plus. If you look across the  
11 country, the plants that are running, that is what they look  
12 like. If you look at California's plants, they are mostly  
13 sub-10, that will never work. They have got to get larger.

14           Established ways of doing business, this supplies  
15 both the petroleum industry, it was made reference to  
16 earlier, as well as those in California who control  
17 currently these waste feedstocks, they have historically not  
18 gone into energy markets, they have historically gone into  
19 feed markets, or been exported, and they have been burnt by  
20 some of the early biodiesel companies that bought used  
21 cooking oil, or animal fats from them, failed to pay, and so  
22 they are hesitant to sell back into that industry. That  
23 will not be a problem once they are known as good repeated  
24 buyers, but that is something that, you know, you were  
25 looking for hurdles? There is one we have identified.

1           Finally here, NO<sub>x</sub>, and everyone in this room is  
2 familiar with some of the concerns the Air Resources Board  
3 has had with regards to potential NO<sub>x</sub> increases with  
4 biodiesel. We believe, based on data coming out of the  
5 Natural and Renewable Energy Laboratory that biodiesel  
6 blends of B20 and down are NO<sub>x</sub> neutral. The ARB will be  
7 weighing in on that question this fall, as Dean made  
8 reference.

9           So let's move to the solutions portion. What can  
10 the state do and, in particular, what can the state do with  
11 AB 118 funds. By far and away, the number one thing you can  
12 do, and for those of you who know me, this is nothing new,  
13 address this wholesale infrastructure problem. In some  
14 early discussions, there was an idea of doing one rack down  
15 in Southern California, and one in Northern California. We  
16 have talked to Kinder Morgan, we have talked to the  
17 engineers, we know that it is about \$2 million per rack to  
18 put this in. This is not something that is obsolete  
19 infrastructure, if you are one of the people that believes  
20 biodiesel is an interim fuel, you still need this  
21 infrastructure because you are going to need a place for the  
22 renewable diesel to come down the road, as well. This is  
23 good infrastructure for our fueling, it helps with biodiesel  
24 today and renewable diesel tomorrow. I would actually  
25 encourage far more than just two. I mean, if you think

1 about \$2 million a pop, 50 percent match, if you took \$5-  
2 10 million and spread these things throughout the state, you  
3 would make a game changing difference. There has been about  
4 probably in excess of \$100 million of private capital that  
5 has been spent in biodiesel plants still in the ground in  
6 California today, it is massively under-utilized for two  
7 reasons, 1) it cannot run the right feedstocks in those  
8 cases, it cannot run used cooking oil animal fats, and 2) it  
9 cannot access the market cost-effectively because there is  
10 no infrastructure at the wholesale place. If we can address  
11 both of those issues, that \$100 million investment can be  
12 put to good use.

13 Other issues that we need to talk about --  
14 underground storage tanks. We have got a patch right now  
15 that we worked on with the Water Board, but this is an issue  
16 that renewable diesel is going to face, we need to get ahead  
17 of the issue on it, and it is an issue that biodiesel, while  
18 it has temporarily solved, it needs a longer term solution.  
19 It has been mentioned a couple times about upgrading the  
20 front end. I will just add a little bit to Michael's  
21 question, the question you gave Michael with regard to what  
22 actually needs to be done. There is impurities in used  
23 cooking oils and animal fats, which are the cheapest  
24 feedstocks, these same impurities also exist, or similar  
25 impurities exist, in the corn oil that we can extract from

1 plants like Dolores', the Calgren plant. Those are by far  
2 and away the best greenhouse gas profiles, as well as the  
3 most cost-effective feedstocks for biodiesel. And there are  
4 really only two plants in the state today that can cost-  
5 effectively process biodiesel from those materials, IWP down  
6 in Coachella, and the Crimson plant in Bakersfield. The  
7 other plants that are in the state, some of them deserve  
8 some grant funds, or some loans to upgrade and get these  
9 front ends in, otherwise those are going to become stranded  
10 assets.

11           Next generation feedstocks? I think a small  
12 amount of money needs to go to these things. Most people  
13 think algae is at least five years away, you will be hearing  
14 more on that tomorrow. And then, again, I think some small  
15 amount of money should also go into next generation  
16 conversation technologies. What is renewable diesel going  
17 to look like outside the context of the petroleum refinery?  
18 And do we want to fund that? And what is an integrative bio  
19 refinery going to look like? As I mentioned earlier,  
20 petroleum refineries do not just produce fuel, they produce  
21 a whole suite of products, and that is how they can make  
22 fuel again expensively. Biofuels are going to need to do  
23 the same thing. If you have any questions on any of this,  
24 feel free to reach out to me or the CBA Outreach  
25 Coordinator, Celia. I will be more than happy to answer

1 questions and come up for a follow-on one-on-one. I  
2 appreciate your time today and I am happy to answer any  
3 questions.

4 MR. MCKINNEY: Great, thank you very very much,  
5 Eric, that was right on point and very informative. I guess  
6 a point of process here. We are at the a lot of time for  
7 this panel, perhaps we could take 10 or 15 minutes for  
8 discussion and push lunch back a little bit? I see nods,  
9 okay. Why don't we say a 10 or 15 minute discussion with  
10 the panels and then I will say a few things before we break  
11 for lunch. Tim, do you want to kick us off?

12 MR. OLSON: Well, I want to ask Eric one question  
13 first, and this might be offline, just a clarification of  
14 that cost of the terminal rack infrastructure. We are  
15 hearing that those costs are much higher than \$2 million per  
16 project, and if you are referring to what the state could  
17 do, that is kind of the level that people have asked us, if  
18 we can get \$2 million, \$3 million, \$4 million, eventually  
19 for a \$40 million project, leading to a \$40 million project.  
20 So we would like some clarification on that.

21 MR. BOWEN: Happy to do that. So I cannot  
22 remember the exact number of terminals in the state, but it  
23 is in the couple dozen range. And so you are not building  
24 something from scratch. What we are talking about is  
25 putting in a dedicated storage tank as, say, a Kinder Morgan



1 rack, and putting in piping and blending equipment to feed  
2 that rack, and feed that tank into the rack. I have worked  
3 these numbers with Kinder Morgan, and I have worked these  
4 numbers with other folks, \$2 million was a bona fide cost,  
5 and I can get you all the information. We actually may have  
6 sent -- Peter -- well, we may have sent it to Mike Smith  
7 following a meeting we had a while back, but I can  
8 definitely get that to you. Full engineering, full -- and  
9 the key piece of this is it is not about infrastructure that  
10 serves one plant or one facility, you know, if you take  
11 infrastructure of that nature and you put it into these  
12 large bulk transfer system facilities, you know, there are  
13 tens of millions of gallons of diesel moving through those  
14 facilities on a daily basis. And so all you really need to  
15 do is allow plants both within the state of California, as  
16 well as elsewhere, to be able to access that infrastructure.  
17 And, Tim, I will put it on my to-do list to get you the  
18 specific details on that cost information.

19 MR. OLSON: Okay, I appreciate it.

20 MR. WARD: Eric, is that -- just so I can  
21 understand this storage at the large bulk distribution  
22 terminal, but it is also the rack, is that like a  
23 computerized blending rack?

24 MR. BOWEN: Correct.

25 MR. WARD: That is state-of-the-art now, a Skelly

1 system, or whatever it is.

2 MR. BOWEN: Yes, there is state-of-the-art, there  
3 is a little bit of a tricky part on biodiesel in that a pump  
4 and system that will do low blends like B2, B5, will not  
5 also do high blends of like B50, B80, because it cannot  
6 handle that level of variation. So if you want to be able  
7 to do that type of wide range, it actually requires two  
8 systems. Again, all very doable. That probably adds a  
9 couple hundred thousand dollars, but it is all within this  
10 \$2 million budget price range that I have shared with you  
11 today.

12 MR. WARD: Great. Thank you.

13 MR. OLSON: Jim, I think one question I would kind  
14 of like to start off with the panel is, and primarily for  
15 the ethanol people here, can you give us your insights on  
16 how -- if we are providing money, trying to facilitate your  
17 projects getting constructed, and our goal is to get as much  
18 greenhouse gas emission reductions in the actual use of  
19 that, it kind of begs this question: how do we make E85  
20 system work on a pricing standpoint? And maybe for the  
21 biodiesel, the same thing, to what extent can we push that  
22 blend level up or meet fuel and make it work on a pricing  
23 standpoint? And so, I guess anyone of you who want to  
24 respond to that.

25 MR. RUBENSTEIN: Tim, this is Dave Rubenstein with

1 California Ethanol and Power. I honestly -- this is my  
2 own personal view about E85, for instance, is that, you  
3 know, down where I live in the South Bay of Los Angeles, I  
4 have friends that have E85 vehicles and there is just no  
5 place to fill up there, no gas station owners will put a  
6 tank in to service to do that. My own personal feeling,  
7 just being in this industry for a number of years at this  
8 point, going to a higher blend as California is going to a  
9 10 percent blend, and maybe eventually a 15 or 20 percent  
10 blend down the road such as other states already looking  
11 into it, that might be the better way to go. And then, in  
12 terms of greenhouse gas emission reductions, in our case,  
13 you know, we are looking at probably a number of 20, which  
14 is about half of what Brazilian ethanol greenhouse gas  
15 emissions are going to be at, and working with big oil  
16 refiners who are interested in our product, we think that  
17 getting an ethanol with low greenhouse gas emission  
18 reductions such as sugarcane ethanol and sorghum, which we  
19 are looking at, as well, and then going to a higher blend  
20 rate might be the magic formula for what the state is  
21 looking for.

22 MR. WALKER: This is Bob Walker from Swan Biomass.  
23 There are two issues that are sort of co-mingled. One is  
24 that, right now, if you had a carbon credit for going to  
25 E85, that would change the price of the ethanol that was --

1 the value of the ethanol that was going to the refineries;  
2 secondly, you have a problem, and it is problem of -- I  
3 think it is just trust, that you should start marketing  
4 things with, okay, use it as dollars per gallon, fine, but  
5 also force people to put in the gasoline gallon equivalent  
6 number, because then people can just look and figure it out,  
7 rather than saying, "Well, I'm not sure."

8 MR. BOWEN: I am happy to answer that from the  
9 biodiesel standpoint. So on the pricing, the biodiesel in  
10 California made from used cooking oil or animal fat will  
11 leave plant in gate at a full commercial scale facility  
12 below the price of ultra low sulfur diesel, so pricing  
13 problem solved from the plant in gate. I made reference to  
14 the problem of getting it from plant and gate into someone's  
15 tank, and the unnecessary costs that are incurred along the  
16 way. With regard to high blends or niche fuel, I would  
17 strongly urge California to pursue sort of a dual pathway,  
18 one is the low blend pathway and that is where you can use  
19 all the existing diesel pumps, they can easily run up to B5,  
20 B20 if they so choose, easy to do and low maintenance, easy  
21 stuff to do. With higher blends, which I will describe as  
22 anything above B20, that is a niche fuel, and I would  
23 encourage us to continue to think of it and promote it as a  
24 niche fuel. And I have been driving my car personally on  
25 B100 since 2002, and so here we are seven years in, you

1 know, most of that time I paid a premium, I am happy to do  
2 so. And there are certain fleets, you know, Cliff Bar,  
3 certain grocery stores, Whole Foods, people who really want  
4 to wave an environmental flag and want a super high blend,  
5 and from a state policy standpoint, you know, that is great,  
6 they make good stories, but you are not going to move a lot  
7 of diesel that way, you are not going to decrease a lot of  
8 greenhouse gases that way, it is really getting into the  
9 price sensitive fuel users, the truckers, the buses, that  
10 consume 95 percent of the diesel that California consumes,  
11 where you are going to get your greenhouse gas reductions.

12 MR. WALKER: Bob Walker again with a comment on  
13 ethanol. If you look at those prices or the cost figures  
14 that I put out as representative, the price or cost of  
15 ethanol is going to be, in our new paradigm, it is going to  
16 be lower than the price of gasoline. And so what you are  
17 faced with is another problem, how do you manage that  
18 transition disruption? Because a prudent manufacturer of  
19 cellulosic ethanol is going to relax and price his product  
20 under the umbrella of the corn ethanol facilities until he  
21 has not sold out his plant. I mean, he is going to start  
22 lowering the price. If he starts lowering the price, there  
23 is a natural reaction it is going to have, and it is going  
24 to be the winnowing out of the corn-based facilities. But  
25 what the oil industry is going do to react to that is not

1 clear, but the ethanol from cellulosics ultimately can be  
2 down in a range where the oil companies do not want their  
3 gasoline priced either. So you have a really complex kind  
4 of a pricing structure that, from the state's perspective,  
5 they do not want to start inadvertently having people thrown  
6 out of work because you have got something that benefits one  
7 market or versus another.

8 MR. WARD: Does the E85 option shore that price up  
9 a bit? And in response to your previous comment, I think  
10 what we are doing with ethanol many years ago, we did price  
11 it on a Btu equivalency basis and posted that price on the  
12 signage, so I think that is important for the consumer to  
13 know that and they can sort of make their own choice, and so  
14 they are not surprised when they go for that second tank  
15 filled when they did not get the mileage they were hoping  
16 and they were paying slightly less. But is the E85 more of  
17 a break away market for the pricing on it?

18 MR. WALKER: Well, I think you are going to want a  
19 gasoline equivalent price of the E85, as well, and so that  
20 is -- I think what you want to do is make the thing  
21 transparent so that people can do what they want to do. The  
22 E85 is de facto going to be the vehicle for getting a lot of  
23 ethanol into the marketplace because you are not going to  
24 have the vehicle manufacturers saying, "Well, yeah, sure,  
25 you can take it to the E100, that's fine." That is a new

1 issue, whether or not you want to have E100 facilities on  
2 the market. I think you are going to need those and there  
3 are isolated -- it is sort of like a fleet question, you can  
4 find places where it can put fleets of those in, service  
5 them, and they will bring in E100, but that is more of a  
6 diesel kind of a market than a gasoline kind of a market.  
7 Incidentally, I have an observation question for you guys.  
8 Has anybody in California Googled retrofit ethanol systems  
9 for their cars? There are a bunch of people out there with  
10 kits that you can put on a car and make the thing eat  
11 ethanol at whatever level you want.

12 MR. WARD: I have not Googled that, maybe we  
13 should have Dean Simeroth Google that. I think Air  
14 Resources Board would be very interested in the results from  
15 that Google search.

16 MR. WALKER: Well, it is fifty bucks for a kit to  
17 convert to handling basically E85 now, a gasoline --

18 MR. WARD: And then certification through ARB  
19 might be --

20 MR. WALKER: Well, and that is the point. You  
21 have to put in a new system that says, "Okay, are you going  
22 to let these guys take the kits off who want to certify  
23 their car before they put the kits on?"

24 MR. WARD: Happy not to be rated for an agency at  
25 this point.

1           MR. WALKER: Well, but without the regulated  
2 agency, the ultimate result is going to be fairly  
3 straightforward, I think.

4           MR. OLSON: I have one other comment or question  
5 for each of the panel members. We heard a lot from you in  
6 different things, some very common things about what I would  
7 call cost sharing on some of the initial production plants,  
8 feasibility study, what I would describe as pre-development  
9 types of activities. And you had some suggestions on kind  
10 of regulatory relief, permitting. If you are asked this  
11 question, what would be the one or two top things you would  
12 ask us to do, whether it is spending money, or trying to  
13 facilitate that? What would each one of you suggest? Maybe  
14 start with Eric and go through.

15           MR. BOWEN: Easy. Spend money on infrastructure.

16           MR. OLSON: Michael?

17           MR. REDIMER: I guess, yeah, I think  
18 infrastructure would be good. I think some sort of  
19 recognition or a recommendation on where policies have kind  
20 of gotten across from each other and have created barriers.  
21 I think it would be an exercise that maybe the staff at the  
22 Energy Commission could take on at some level, just to say,  
23 you know, "Here are some of the impediments to the industry  
24 flourishing in California," I think just to raise the  
25 political consciousness of the state, I think, would be



1 helpful.

2 MR. GARCIA: Two items, one is, again, repeating  
3 the issue on the port access and storage. That is a real  
4 problem and it will block people's flow into the state.  
5 Second is perhaps a bit more specific to my technology, but  
6 genuine R&D funding to move the technology to the commercial  
7 state. Our company is at a state where we have proven the  
8 technology, we are improving the technology, but now we need  
9 the funding to take it to the full production scale, and  
10 that is not an easy step.

11 MR. PELLENS: Brian Pellens, Great Valley. In my  
12 perspective for what we are outlining, feedstock  
13 availability, feedstock studies, we need that yesterday. I  
14 am assuming that the work is ongoing, but we are ready to  
15 use that data today. Secondly, for financing facilities,  
16 that guarantees would be very useful. Thirdly, with the  
17 specific process that we are outlining, inasmuch as it is a  
18 template, we think it would be very valuable to evaluate  
19 some of the alternative products that we would make. We  
20 know that ethanol is very valuable, but inasmuch as we are  
21 going after the integrative bio refinery, producing energy  
22 and materials, and chemical feedstocks, that would be very  
23 useful.

24 MR. RUBENSTEIN: Dave Rubenstein with California  
25 Ethanol and Power. In our case, at this point, it would be

1 the funding and trying to overcome the requirement of  
2 having the federal ARA portion tied to getting funding right  
3 now. That has been a serious hurdle for us. And I liked  
4 what Brian said, too, about also then helping us to look at  
5 -- in our case, we have been looking in various sugarcane  
6 varieties that we could grow, up to 20 of them, as a matter  
7 of fact, all funded internally, so it would be nice to maybe  
8 have some assistance there. Or, we have also started to  
9 look at sorghum as a fill-in, so any assistance in that area  
10 would greatly help there.

11 MR. WALKER: Well, I think I made it pretty clear  
12 that getting a plant built now -- you have to decide what  
13 you want to do about the RFP2 because that is facing you as  
14 an obligation; how are you going to get beyond that? And I  
15 think the only way to do it, and in terms of the folks here  
16 who are making ethanol, they would be included, of course,  
17 in any build-out, because they are the leaders right now,  
18 and they need that one plant to get started, as well.

19 MR. MCKINNEY: Okay, thank you. I think we have  
20 one question on WebEx, John Shears.

21 MR. SHEARS: Thanks, Jim. Can people hear me?

22 MR. MCKINNEY: Can you speak up a bit, please?

23 MR. SHEARS: Now can people hear me?

24 MR. MCKINNEY: Okay, go.

25 MR. SHEARS: Yeah, I just wanted to, you know,

1 this has been touched upon, I think maybe it was Eric  
2 Bowen who mentioned the vehicle issues and, not to put Dean  
3 Simeroth on the spot if he is still in the room, but there  
4 are concerns with the compatibility for any type of  
5 biodiesel and the new clean diesel technology that is also  
6 on the heavy duty side, the 2010 target coming up, and so I  
7 have a question with regards to those companies that have  
8 plants to continue, you know, on the same biodiesel pathway,  
9 what they think their market profit will be going forward,  
10 given that we have the Low Carbon Fuel Standard and  
11 everything driving demand for low carbon fuel. In  
12 California, many of us are always thinking about the linkage  
13 with the vehicle technologies, but when most of the car  
14 manufacturers begrudgingly are accepting up to five percent  
15 blend, and are loath to accept anything higher because of  
16 issues relating to compatibility with the fuel systems,  
17 emissions control, etc., and California on the vehicle side  
18 is catering to a new set of revisions for the vehicle  
19 regulations that are going to push the emissions controls  
20 even harder, and even in the absence of the biodiesel  
21 question, diesel vehicles will have some challenges, meaning  
22 that they are proposed targets to be contemplated, so I am  
23 just -- my question is with regard to, you know, how the  
24 companies that are pushing for being ramped up in production  
25 of, say, diesel, are they thinking about these longer term

1 prospects for their fuel products, given the fleet of  
2 policies that are pushing advancement not only on fuel, but  
3 also on vehicles going forward in the coming year? So if  
4 anybody would like to make some general comments, because I  
5 understand Amyris Technology is one of the companies that  
6 has the equivalent of a hydrocarbon fuel, the challenge, I  
7 think, going forward is going to be for those companies that  
8 are sort of sticking on the same pathways.

9           MR. REDIMER: This is Michael Redimer, Community  
10 Biofuels. Well, I think right now we would be thrilled to  
11 death if we could get 5 percent of all the diesel fuel in  
12 California, much less the U.S., so that would be a great  
13 goal to have over the next three or four years. I think  
14 beyond that, clearly we are going to have to work through  
15 fuel compatibility issues with emission control systems as  
16 we go forward. How that ultimately translates itself, I  
17 wish I had my crystal ball, but generally, yeah, it is  
18 issues that are going to have to be addressed. I know CARB  
19 has been looking at them, I know the engine manufacturers  
20 have been looking at it, and we will have to see how things  
21 work their way out over the next four or five years or so.

22           MR. MCKINNEY: Okay, why don't we take one more  
23 question from Mr. Kaffka.

24           DR. KAFFKA: Hi, thanks, Jim. Steve Kaffka,  
25 California Biomass Collaborative. There have been a number

1 of comments about feedstock, questions of supply, I just  
2 wanted to mention that, through the generosity of the  
3 California Energy Commission and California CDFA, the  
4 University is starting research on several of the crops that  
5 have been mentioned this morning, and we would like to have  
6 a technical advisory committee. So if anybody is interested  
7 in participating in making suggestions to us, particularly  
8 sugarcane, sweet sorghum, and winter Wesley [phonetic],  
9 particularly, low rainfall crops are mostly in mind, but  
10 there may be some others and so there is at least an initial  
11 investment going forward to answer some of these agronomic  
12 and supply questions. And I will talk about it more this  
13 afternoon, but particularly tomorrow.

14 MR. MCKINNEY: Okay, and there was one comment, I  
15 think, on the chat from WebEx which had kind of to do with  
16 the comparative methodologies, or cellulosic ethanol from  
17 waste streams or trees versus electricity, and I would refer  
18 that person to the fuel pathway document, it is available on  
19 the LCFS website through the Air Resources Board, or through  
20 our AB 1007 Report, which is available on the Energy  
21 Commission's website. With that, I want to express my deep  
22 appreciation to the panelists today. This has been one of  
23 the most informative panel discussions I have participated  
24 in from industry. So we deeply appreciate this. We are  
25 serious about really wanting to understand industry's

1 perspective as we move forward in crafting this draft, the  
2 staff draft, the next version of the AB 118 Investment Plan.  
3 So thank you very much, gentlemen and Dolores. We are going  
4 to reconvene at 1:30, so those of you on that panel, if you  
5 could be punctual, please, there are several lunch  
6 establishments if you go east of "O" or "P" Street where you  
7 can get a quick bite to eat. Again, thank you so much.

8 [Off the record at 12:36 p.m.]

9 [Back on the record at 1:35 p.m.]

10 MR. MCKINNEY: So the focus of this next panel is  
11 going to be on wholesale and retail, both infrastructure and  
12 market issues. And I think we heard some very good  
13 information about infrastructure needs for biodiesel  
14 distribution this morning, and hopefully we learn more about  
15 that for this next panel. So again, I will refer speakers  
16 in the audience to the list of questions that we had put out  
17 previously, so if you could try and answer some of those, if  
18 you could go through it. And, otherwise, Tim and Pete and I  
19 will be asking follow-up questions. So, Rick, are you ready  
20 to go here?

21 MR. SHEDD: Yes, I am.

22 MR. MCKINNEY: Okay. So our first speaker is Mr.  
23 Rick Shedd from the Department of General Services, Office  
24 of Fleet Management. Welcome, Rick.

25 MR. SHEDD: Thank you very much. I appreciate the

1 opportunity to speak to the workshop and give you the  
2 government perspective, from the end user of biofuels over  
3 the last several years. I can tell you right off the bat  
4 that this group of alternative fuels, and I have been in  
5 this business for a number of years, and these biofuels have  
6 taken off much faster and have gotten more widespread use  
7 out of the gate than most any of our other alternative fuel  
8 projects in the past, so we are very confident that the  
9 trend is going in the right direction.

10           This particular slide, just to give you a little  
11 bit of background on the state fleet, this report was done  
12 in 2007. We are currently validating the 2008 numbers, but  
13 this is a pie chart that shows you the passenger vehicle  
14 inventory for the state's vehicle fleet. There are 38,326  
15 passenger vehicles. The majority of those vehicles, 81  
16 percent, in fact, are maintained within eight departments,  
17 the largest department obviously is Caltrans, General  
18 Services, CHP, Corrections, California State University,  
19 Parks and Rec, Fish and Game, and Forestry, all of which  
20 have bulk fuel sites, as well. The other 19 percent of the  
21 state's fleet is contained in more than 100 different small  
22 and medium sized state agencies, spread out across the  
23 entire state of California from border to border.

24           This gives you a little background on the  
25 inventory of the state fleet, almost 80 percent is made up

1 of gas and diesel vehicles. We are working on a new  
2 system to capture fleet numbers and data from the different  
3 state agencies that is going into a fleet asset management  
4 system that is being deployed as we speak, so that by next  
5 year we should have the numbers broken down even finer, so  
6 that we will know how this top number, for example, how many  
7 of those are diesel versus gasoline. Right now, we are  
8 collecting this information manually, so it has made it more  
9 difficult to get down into some of the detail. Twenty-one  
10 percent of the state fleet are made up of alternative fuel  
11 vehicles and bringing up the rear is 1 percent of hybrid  
12 vehicles. The last bullet down there, 36,027 vehicles were  
13 purchased during 2007. That is fairly substantial. The  
14 number stays about the same year in and year out. We go  
15 from 3,500 to maybe 4,500 vehicle purchases every year.  
16 This particular year, we are going to reduce that number  
17 quite a bit because we are under a freeze, a purchasing  
18 freeze, so state agencies are going to have to get an  
19 exemption from their cabin level agency secretary in order  
20 to move forward with any purchases. And there is also a 15  
21 percent reduction in the state fleet. We are going through  
22 a drill right now to reduce the size of the state fleet by  
23 15 percent. So that is going to reduce overall the number  
24 of vehicles within the state fleet and the number of  
25 vehicles purchased in the future.



1           For the alternative fuels segment, the number of  
2 flex fuel vehicles has been increasing over time, and you  
3 can see here I just pulled up the last three years. Again,  
4 2008 numbers are getting validated now, but I suspect they  
5 are going to come in around 70 percent from the numbers I  
6 have seen. But you can see how that trend has increased  
7 over the last three years, and especially so between 2006  
8 and 2007, because the manufacturers began offering more  
9 models in the flex fuel type. So what we saw especially to  
10 help the state fleet was when Ford introduced the Crown  
11 Victoria police package vehicle in a flex fuel version, and  
12 because the CHP is one of the largest purchasers of vehicles  
13 every year, we saw a huge increase in the number of flex  
14 fuel vehicles that model year. We expect that trend to  
15 continue.

16           MR. WARD: Rick, this is the percentage of new  
17 vehicles purchased each year?

18           MR. SHEDD: No, this is the percentage in the  
19 fleet as of 2007.

20           MR. WARD: For all fleet number?

21           MR. SHEDD: Correct. Now, I put flex fuel instead  
22 of E85 because we still do have some of the old M85 vehicles  
23 running around, so I wanted to leave that open. So we do  
24 have vehicles that were part of the old M85 demonstration  
25 project that are still in the state fleet. But then about

1 -- and of course, we also have as the last bullet point  
2 sets out other alternative fuel vehicles, including  
3 compressed natural gas, propane, and electric. But you can  
4 see the trend is towards flex fuel because that is what is  
5 being offered from the vehicle manufacturers. It was about  
6 2003-2004 where we saw the compressed natural gas vehicle  
7 offerings decrease significantly and the flex fuel offerings  
8 increase.

9           We also took a stab at getting our arms around the  
10 fuel that the state fleet consumes. This had never been  
11 done before. And so we worked for months and months on  
12 trying to figure out how many gallons of gasoline, diesel,  
13 and other fuels the state fleet does consume. This  
14 particular report was done for our fiscal year because we  
15 were trying to follow the state fleet contract that  
16 corresponded to our bulk fuel purchases, but we are going to  
17 roll this particular report into the previous numbers I was  
18 showing you, as part of an annual report on the state fleet,  
19 and we are going to include the fuel purchases, as well. So  
20 beginning next year, we will have all of that in a calendar  
21 year basis, which is what our statutory requirement is. But  
22 as you can see, 34 million gallons of gasoline were  
23 purchased during that fiscal year, 11 million gallons of  
24 diesel, 327,174 gallons of gas gallon equivalent of  
25 compressed natural gas or propane, and just over 66,000

1 gallons of E85. Now, what is significant about that is,  
2 you may recall some of the inquiries that were being done by  
3 the Senate back in the summer of 2007 because we were being  
4 asked why we were purchasing flex fuel vehicles when there  
5 was not flex fuel available at the time. And in the summer  
6 of 2007, the only station available retail at that point in  
7 time was down in San Diego. We had a station being built in  
8 the Sacramento State garage, which is across the street from  
9 this particular building, but the permitting had not been  
10 quite completed on that particular project, so we procured a  
11 temporary 1,000 below ground tank, 1,000 gallon above ground  
12 tank, and began dispensing fuel from our state garage here  
13 in Sacramento. So that summer, we basically went from zero  
14 almost to a significant number, 66,000 gallons, in the  
15 course of a year. In 2008, of course, the numbers are not  
16 in yet, but we suspect that number will increase  
17 significantly.

18           Forty-two percent of the state fleet purchases its  
19 fuel at retail commercial outlets and we use what is known  
20 as a state fuel card. There are a number of these cards  
21 that are running around the nation for fleets to use. The  
22 particular card that the state uses is called the Voyager  
23 Card, it is a U.S. Bank product and it is exclusive for fuel  
24 and fleet-type purchases. So we get a lot of rich data  
25 feedback from that particular card. Fifty-two percent of

1 the state fuel is purchased through bulk purchasing where  
2 we used leveraged procurement contracts to go out and buy  
3 wholesale from the distributors to feed our underground or  
4 aboveground tanks. And the remaining fuel purchases were  
5 derived from rental cars, usually those travel expense  
6 claims that are turned in when somebody is doing travel, and  
7 it is not done on a fleet card. Those were a little harder  
8 to get our arms around, but we did make a stab at it and we  
9 think we got some pretty -- we are here in the ballpark, at  
10 least, for some pretty good numbers on what the state is  
11 purchasing, but there is a lot of work to be done to really  
12 fine tune our data gathering process and make these numbers  
13 as accurate as possible. And I will get into that in a  
14 moment. Also, the last bullet points out that we average  
15 about 32,000 retail transactions every month.

16           One of the things that we wanted to take a look at  
17 and bring to your attention were the number of bulk fuel  
18 tanks that the state operates and, again, we have state  
19 agencies that are all over the map, they are in rural areas,  
20 very very remote areas, and they are in urban areas, as  
21 well. But we have got 970 diesel tanks out there, 772  
22 gasoline tanks. This also, I wanted to point out, includes  
23 the University of California. The other information that I  
24 was sharing earlier on the number of state vehicles did not  
25 include the University of California, they are not part of

1 our group that we collect information from. But they are  
2 included in this particular detail because this is what --  
3 the Department of General Services Procurement Division  
4 sends out a survey every year to all the state entities that  
5 purchase bulk fuel to get an idea of where their tanks are  
6 located, the size of the tank, the type of fuel that they  
7 use so that they can go after these leveraged procurements.  
8 And the vendors bidding on these need to know that  
9 information because a lot of the bids have to be derived  
10 from where the tanks are located, so the distance between  
11 where the refinery are, the distribution site, and the final  
12 destination goes into that factor. Currently, 90 E85 tanks  
13 are operating right across the street here; we were one of  
14 the first in the state, we had a 15,000 gallon underground  
15 tank installed back in 2007. There are eight to 10 E85  
16 tanks planned for 2010, they all range from 500 gallon  
17 aboveground tanks to 15,000 gallon underground tanks, and  
18 the Department of Transportation, Caltrans, is transitioning  
19 to B20, and projects it can possibly use up to 3 million  
20 gallons of B20 by 2010. I will also note that they are  
21 probably the most aggressive department in the state as far  
22 as converting their bulk fuel sites over to E85, as well as  
23 their diesel over to biofuels.

24           So the significant issues that I would like to  
25 bring to your attention, obviously funding is on everyone's

1 mind if you are in state government because of the budget  
2 deficit, so scarce funding resources, we are competing for  
3 other things that we are trying to do at the same time, so  
4 modernizing fueling sites and building infrastructure  
5 obviously has to compete with all the other things on our  
6 agenda. It is a major concern. Permitting -- this may have  
7 gotten a little bit better, but I can tell you from personal  
8 experience, when we were trying to get permits for our local  
9 site here in Sacramento, there is a very lengthy and  
10 unpredictable process, really depending upon where you are  
11 in the state, the process could be much different. You have  
12 got not only the Air Resources Board and local air quality  
13 districts, but you have got the Water Quality Control  
14 Boards, you have got the Fire Marshal, or it may be the  
15 local Fire Departments that you have to navigate through.  
16 We thought we had gotten all of our permits through and,  
17 again, this was delaying our opening of our 15,000  
18 underground tank, hence going to a 1,000 gallon aboveground  
19 tank just with a limited permit to get operational. We  
20 thought we had everything concluded when, lo and behold, we  
21 needed a light rail permit because our tank was so close to  
22 the Sacramento light rail. No one knew that there had to be  
23 a permit for that, but because of the proximity of the  
24 underground tank to the light rail track, we had to step  
25 through another hoop. One of the things that we would

1 really like to see, and maybe some of the other retailers,  
2 if they are presenting on this, might be able to speak to  
3 that, but a more streamlined process for permitting, a one-  
4 stop-shop, if you will, where applications for these things  
5 could be vetted across the board. I know when we did get  
6 our underground tank put in, finally authorized, and we were  
7 pumping, we took that 1,000 gallon aboveground tank, we  
8 moved it across the river to the CHP academy where they  
9 build all the CHP cars, only four miles from here, it took  
10 them another six to eight months to get it permitted over  
11 there. So just moving it across the river and changing, you  
12 know, your water quality district made a ton of difference,  
13 you know, that that is replicated up and down the state.

14           There is also limited ability to share fuel  
15 resources between state agencies and there are a number of  
16 reasons for that. If you can imagine a Caltrans maintenance  
17 yard that has a lot of heavy equipment coming and going out  
18 of it all day long, these fueling sites that they have are  
19 for their own equipment so that they can keep them up and  
20 running and so they can get out on the road early. When you  
21 have sharing, you have to be able to account for the fuel,  
22 where it is going, and be able, if it is another state  
23 agency, to bill them for that. Really, the Department of  
24 General Services was the only state agency set up for that  
25 type of fuel exchange. Our garage here in Sacramento is

1 designed just like a regular gas station would be  
2 designed. We have fuel attendants, they work the pumps,  
3 they swipe the cards, they make sure that all the  
4 information is taken from the state vehicle that is out  
5 there getting gas, and we have gasoline, we have E85, of  
6 course, we have compressed natural gas, but all of those  
7 vehicles in the downtown area that come by our station, we  
8 have to have a way of recognizing who they are, so we set up  
9 an account with them so that we can bill them at the end of  
10 the month for the fuel they use. In many, if not most, of  
11 the bulk fuel sites that other state agencies operate up and  
12 down the state of California, they are not set up to  
13 transfer funds between one another for fuel purchases; in  
14 fact, in most cases, they have got a clipboard hanging on  
15 the side of the fuel tank, so their operators of their  
16 equipment drive by, they fuel up the rigs at the end of the  
17 evening, they write their vehicle information down, whether  
18 it be a truck, a car, or whatever they are fueling up, and  
19 they account for it that way. That is not an optimum way of  
20 sharing resources between state agencies. The pumps are  
21 often times very far in the back of an equipment yard, so  
22 somebody that is unfamiliar with that would have a tough  
23 time navigating it, they do not have staff assigned to man  
24 those pumps, so it is really not set up as a fuel station,  
25 if you will. But there are some things that can be done. I



1 know in the case of Caltrans, they do have fuel sharing  
2 with some of the local CHP staff who can come by and buy  
3 fuel from them, and they just set up an account somehow to  
4 take care of that manually. But for that to be done in any  
5 extensive way, it would require some electronic equipment  
6 installed on those pumps so they could actually use card  
7 swiping and things of that nature. Retail product miscoding  
8 also hampers the accurate tracking of the E85 fuel use, and  
9 we are not the only ones who are going to run into this, but  
10 the federal government has also had this issue crop up.

11           When we only had a few E85 stations throughout the  
12 state, one of the things I mentioned earlier on our fuel  
13 card, we get robust information from our fuel card  
14 providers, so every month we had -- the number was 32-36,000  
15 transactions every month -- we get this information back and  
16 each department gets information back so they can pay their  
17 fuel bill. Well, one of the things that we were noticing  
18 was we would run our vehicles through the E85 stations that  
19 were available out there, but we were not always getting E85  
20 reported back as being purchased. And what we found out is  
21 there is a disconnect sometimes between a point of sale and  
22 the third-party processor where this goes through a bank  
23 transaction and then back to the customer. And it has  
24 become such a problem now because we are growing and growing  
25 the number of retail stations. For the state, especially,

1 and I am sure other government entities in California, we  
2 are required by statute to account for our fuel usage,  
3 especially our alternative fuel usage, because we want to  
4 show how we are moving the ball in the right direction. And  
5 this has become a huge problem for us. When we were able to  
6 identify just a few stations out there and what the  
7 particular code might be, it was relatively easy enough on  
8 the back end of the process to do the conversions ourselves,  
9 but as more and more stations are coming online, running  
10 vehicles through these stations we are finding out that the  
11 fuel is not only miscoded, in some cases it was fairly easy  
12 to convert if we know we bought E85 at a particular date and  
13 time for a particular vehicle, and it shows up on our report  
14 as, let's say, M85, which was one of the codes, it is easy  
15 if it shows up as gasohol 7.7, and that was another code  
16 that it was using, some vendors were using. So we were able  
17 to easily decipher those, but there is at least a dozen  
18 different codes now that we have identified that are being  
19 traced to our E85 purchases, and the most difficult ones are  
20 when they are coded as Supreme or just regular unleaded  
21 because, if it is a normal fuel, a different type of fuel  
22 that could possibly be purchased for that vehicle, we would  
23 have a difficult time making that conversion because we do  
24 not know if they actually bought E85 or if they bought  
25 Supreme, or if they bought regular unleaded. So that has

1 caused us to enter into discussions with as many people as  
2 we can possibly think to talk to about solving this problem,  
3 and the federal government, in fact, on my last page there  
4 is a reference cite to a report you may be familiar with it,  
5 that the federal government commissioned on this very issue,  
6 because it is a huge problem for them, as well. They are  
7 trying to account for the E85 fuel that they are using and  
8 they are not able to do so on a national level. So this is  
9 a problem that really has to be addressed in some way,  
10 shape, or form, or we are not going to be able to accurately  
11 track how much fuel we use.

12 MR. MCKINNEY: You have got a couple minutes left.

13 MR. SHEDD: Thank you. And then, in speaking to  
14 Caltrans this morning, they said that -- we do not down at  
15 General Services have any diesel pumps, but they do,  
16 obviously, and they are moving in that direction in a large  
17 way. But one of the things that they are noticing is the  
18 significant higher cost of biodiesel for them, and they are  
19 going to see this crop up as a budgetary issue in the very  
20 near future because, as they project, they may be able to  
21 use as much as 3 million gallons in 2010, and that equates  
22 to an awful lot of additional expense for them in that area,  
23 so they were hoping that there would be the ability to at  
24 least put this out on the table for some type of cost  
25 differential that might help them out in that way. And with

1 that, I will go ahead and give you my last slide. This  
2 has some of the information that I was quoting, some of  
3 those numbers are on these following references, the Vehicle  
4 Acquisition Report, again, the 2008 Report is going to be  
5 coming out shortly, the 2007-'08 Fiscal Year Fuel Data  
6 Report is an interesting report to read because it gets into  
7 a lot of the anomalies and a lot of the assumptions that we  
8 had to make to even get our minds around how much fuel was  
9 being purchased, and a lot of work needs to be done in that  
10 area. And then the Fuel Carb reporting, that is the federal  
11 report. And right now, just to end this, one of the things  
12 that I think -- a real big area that I think needs to help  
13 close the gap is to cover education because, as much work as  
14 we are currently doing on driver education, it obviously is  
15 not enough to get all the folks that are in the type of  
16 vehicles that can use biofuels to actually get to the pumps  
17 and use those. People are generally creatures of habit and  
18 one of the things we are trying to do is use the website at  
19 the bottom, which is the one the federal government puts  
20 out, which is a locator of your alternative fuels, and we  
21 have got that on our website. We are also looking into  
22 using the Voyager Card data to find out where the state  
23 drivers are fueling up, and then finding out in what  
24 proximity was there an E85 station closely available to them  
25 that they may not have made the connection, and we are going

1 to try to make that connection for them. But I think  
2 driver education is another important thing that can be  
3 done. Thank you.

4 MR. MCKINNEY: Thanks very much, Rick. Our next  
5 speaker is going to be Mr. Mark Sperling with Interstate  
6 Oil.

7 MR. SPERLING: Hello, can you hear me okay.  
8 Hello, my name is Mark Sperling. I am with Interstate Oil  
9 out of Sacramento. We are a petroleum distributor. We  
10 cover Northern California and Reno area. We had some  
11 slides, but I guess they did not get them, so I am just  
12 going to talk off the shelf here. I was going to show you  
13 one of our trucks we just got. It was just wrapped, it was  
14 one of our new trucks, and it says "Dedicated to delivering  
15 cleaner burning fuel." So we are in that mode there. We  
16 are looking at all alternative fuels. We are doing most --  
17 or we are doing all of the E85 for the State of California,  
18 or in this Northern California area for California. What we  
19 see as the main problem is the infrastructure, both upstream  
20 and downstream. On the upstream side, it has been touched  
21 on already, is the terminals. We really see where terminals  
22 need to have the biofuels at the facilities to blend there  
23 because of the logistics and cost to load at one place for  
24 the biofuels, as Dolores was saying, there is so much  
25 movement of the biofuels. So if we had it all at one place,

1 you could load it, the cost would stay down, and I think  
2 it would be more beneficial to everybody. I think earlier  
3 today somebody talked about Kinder Morgan putting in tanks,  
4 or asking them to. The reason that I see they have a  
5 problem with that is they do not own the fuel. They are  
6 really a third-party terminal. So with that, they would  
7 have to have their customers commit to it, to move that  
8 tank. If not, that fuel just sits there. They do not own  
9 any of the fuel themselves. So what I see is they should  
10 really go towards the customers, get the customers to push  
11 to get biofuel in their terminals, and then in that way it  
12 would move along. Other than that, you would have to go to  
13 like a Chevron or Shell, somebody that has their own fuel,  
14 their own terminal, and that would make better sense to them  
15 because they own both the fuel and the bio.

16           On the down side, we have talked a lot about the  
17 retail end of it, the commercial car blocks, the retail  
18 stations, I see that we should look at the commercial  
19 trucking, too, trying to get some infrastructure there for  
20 the bio, give them incentives, even for the busing  
21 districts, things like this here. As Rick was just saying  
22 earlier, there is really on the bio and the B20 blend,  
23 diesel is less expensive, ULSD, than bio B20. So if you  
24 give them an incentive, that would give them a reason to go  
25 towards the B20 and use biodiesel. Right now, they really

1 do not have an incentive. We had really a heartache about  
2 a year and a half ago when the Water Board came out with the  
3 regulation of no bio at all underground -- B5, B1, it did  
4 not matter. That hurt us a lot. We had everything going in  
5 the right direction and they came out with that regulation  
6 and it really hurt us as the bio industry because, once that  
7 happened, everybody got scared, they got away from it, they  
8 would not touch it, now, of course, you can go with the B5  
9 and the B20 with certain variances. And, really, it would  
10 be nicer to have it go all the way to B99 because there are  
11 a lot of smaller jobbers out there and people that would  
12 like to have the B99 to make their own blends, and they  
13 cannot put it anywhere unless they have an aboveground tank.  
14 So the regulations are hurting us a little bit on the bio  
15 end.

16           On the -- still, the infrastructure is the big  
17 push that I see. We just need more stations. On the E85,  
18 basically the stations that you see are in the Sacramento  
19 area, the Bay Area, and down South. Anything in between,  
20 there are not that many E85 stations. I think there is one  
21 down in Madera, but I am not positive. But there has to be  
22 more consistency of E85 stations throughout to make this  
23 work, it is the same way with biodiesel, there are no  
24 biodiesel stations that I really see out there that are  
25 predominant, like truck stops, or anything like that. They

1 are just very -- they have no reason to go into the bio  
2 end of it, so they are not looking at it, no incentives, no  
3 price difference, so they stay with the regular ULSD.

4           Of course, on the state, I know like Caltrans, I  
5 have talked to them and they are looking to go into the B20,  
6 but they are not turning the whole fleets over, they are  
7 trying to find car blocks and different outlets that they  
8 can fuel at to give it a test period. And once that is  
9 done, I think they will go full to the B20, but right now  
10 they are still on the verge of looking at areas, and they do  
11 not have the infrastructure to put B20 in their facilities,  
12 and they have multiple. So that is where that sits.

13           Other than that, I really do not have a lot to say  
14 other than the infrastructure. The infrastructure is the  
15 big push that I see that we need to have done. And I think,  
16 as some kind of incentive -- oh, there is the picture right  
17 there -- there is the picture of our truck, one of our  
18 trucks that we just had done. So the infrastructure is a  
19 big issue. Once we get more people to understand what  
20 alternative fuels are, too, education to the people out  
21 there, the public, is a big issue because I just do not  
22 think people understand what E85 is, B5 is, B20 is. So even  
23 if they see it on a pump, they probably use it by accident,  
24 but not use it because it is there. I mean, there are a lot  
25 of new stations coming out and I am going to use Propel,



1 they do a heck of a job. When they do it, they have their  
2 E85 and their B5 together, so they have got real good  
3 alternative stations when you go into their locations. But  
4 that is it. I know it was quick.

5 MR. MCKINNEY: Thank you very much, Mark. Sorry  
6 about the confusion there on your presentation.

7 MR. SPERLING: Oh, no problem.

8 MR. MCKINNEY: Actually, I did have a question.  
9 But for the infrastructure location, one of the things that  
10 was discussed this morning was, I think having a larger  
11 terminal in the north end of the state and one in the south  
12 end of the state, does that kind of jive with your views of  
13 the issue? Or do you have more specific recommendations on  
14 how many and where these things should --

15 MR. SPERLING: I agree with that completely, but I  
16 would do more than just at the north and south end, I would  
17 do it throughout the state because just doing it in those  
18 locations helps those locations, but it would be the same  
19 scenario as your E85 right now. You would have B20 in the  
20 Sacramento area, you would have B20 in the L.A. area, but  
21 everything in between, you probably would not see that much  
22 of B20 out at the station end of it. So I would try to hit  
23 everything I could, as many terminals as possible, to make  
24 it work.

25 MR. WARD: Yes, Mark. I have a question, too.

1 You mentioned regarding the Kinder Morgan position, that  
2 they need to hear from their customers. Are you their  
3 customer? Is that who you were referring to, the jobbers?

4 MR. SPERLING: No, I am talking more about the  
5 Tesoros, the Valeros, there are independent people who have  
6 product in their facilities, those are their customers.  
7 They do not own the product, they are a third-party  
8 terminal, really. So those are the people I am talking  
9 about, people that are shipper by common at their facility.  
10 That is who you would really have to -- that I see you would  
11 have to talk to. And usually if they have it at one  
12 location, they usually have it at all of their locations,  
13 which Kinder Morgan is the biggest game in town, of course,  
14 in California.

15 MR. WARD: I know they have been talking about it  
16 for a while, and regarding ethanol in the pipeline. What is  
17 your take on that?

18 MR. SPERLING: I do not ever see it happening, not  
19 in California, because of the pipe. It just would  
20 contaminate the fuel. Ethanol picks up too much water, the  
21 pipe is too old. Kinder Morgan would not let that liability  
22 go out on them.

23 MR. WARD: Because it would still be done by rail  
24 or shipment, probably.

25 MR. SPERLING: Basically, it is going to be rail,

1 and that is the other end of it, is in 2010, of course,  
2 you are going up to another 4.3 of ethanol. You are going  
3 to have to see more storage for ethanol to keep the prices  
4 competitive in this area, to keep everything going, plus to  
5 get -- right now, the big push is unit trains. Unit trains  
6 are 100 cars at a time to offload, and you get a better  
7 price on your ethanol. And that is what the big majors are  
8 looking at right now, are unit trains instead of the five  
9 and 10 rail cars at a time. They do not even want to see  
10 that.

11 MR. WARD: And what is the progress on your  
12 terminal facility that you proposed for McClellan?

13 MR. SPERLING: It is looking good. That is about  
14 as far as I can go on that right now. It is looking good.  
15 And we should have an update, I hope, within the next week  
16 publicly.

17 MR. WARD: You are going to have ethanol and  
18 biodiesel storage there?

19 MR. SPERLING: Yes, yes. We will have the whole  
20 thing there.

21 MR. WARD: Thanks. I am glad I was able to pull  
22 that out of you.

23 MR. SPERLING: Excuse me?

24 MR. WARD: I am glad I was able to pull that out  
25 of you.

1 MR. SPERLING: Yeah.

2 MR. WARD: Thank you.

3 MR. MCKINNEY: Mark, I had one last question.

4 Yeah, I think over lunch we were chatting a little bit about  
5 the heavy duty commercial diesel sector, and Eric Bowen  
6 talked about that as a good opportunity this morning because  
7 you have got a very high volume, but it is quite sensitive  
8 to the pricing issues. And I think you are suggesting here  
9 some kind of purchase credit for that market segment?

10 MR. SPERLING: Exactly, it is just like back east  
11 in one of the states they were talking about they get 11  
12 percent or, once they hit a B11, they are getting a certain  
13 percentage back on the fuel, some kind of incentive that  
14 way. I mean, it would be great if we could get biodiesel  
15 into the trains, UP and BN, they are the biggest movers  
16 there is of diesel around this area. So if you can make  
17 some kind of incentive to them to make it worthwhile for  
18 them to make a B20 blend and use it in their trains, or  
19 let's use, I do not know, a trucking outfit that you want to  
20 call "Trucking B" that has 100 trucks out there, if you are  
21 going to make it worthwhile for them to use it, they will  
22 use it and run it up and down the road just so their motors  
23 are warrantied. They do not care what they use, they are  
24 using at the bottom dollar, too, just like everybody else.

25 MR. MCKINNEY: Okay. All right, thanks very much,

1 Mark.

2 MR. SPERLING: Thank you.

3 MR. MCKINNEY: Our next speaker is Rob Elam with  
4 Propel Biofuels.

5 MR. ELAM: Hey everyone, thanks to the Energy  
6 Commission for inviting me today and, Jim, nice to see  
7 familiar faces on the panel especially with Rick and DGS,  
8 who we work with, and Mark who we purchase some of our fuel  
9 from, so kind of all in the family today. My name is Rob  
10 Elam, I was the founder and current President of Propel  
11 Fuels. We are a retail alternative fuel company, so we  
12 build, own, and operate alternative fueling locations,  
13 primarily co-located with existing retail gas stations, but  
14 we will also do stand alone car block fueling stations, as  
15 well. Really, the fundamental solution piece of the supply  
16 chain here that we saw with the complete focus on retail is  
17 creating real markets for all the technologies you discussed  
18 earlier today, the upstream issues around storage, and most  
19 of the E85 issues or the ethanol issues being around, the  
20 blend mandates not around the E85 needs. Where we try to  
21 come in is to specifically locate retail sites and market  
22 directly at alternative fuel customers, creating that true  
23 end user market so we can begin to see real value through  
24 the supply chain, and real demand from folks who are buying  
25 on merits of alternative fuels. Maybe that merit is price,

1 maybe it is mandates like the state fleets, maybe it is  
2 feel good for individuals, but we are learning about what  
3 those merits might be.

4           So earlier in 2009, we opened up five stations in  
5 Sacramento area, and I thought I would spend a few minutes  
6 talking about some of the positive things that we have seen  
7 with the opening of those sites, and then talk a little bit  
8 more about what I think we need to see the expansion of the  
9 retail component, of the infrastructure, and how AB 118  
10 could be helpful.

11           In the last nine months, we have engaged a  
12 significant number of California drivers and vehicles. On  
13 the fleet market side, everyone from the postal service to  
14 Enterprise Rent-a-Car, to Caltrans, DGS, to private fleets.  
15 On the consumer market, thousands of individuals are now  
16 fueling their vehicles with E85 at our locations, or  
17 biodiesel at our locations, that never had in the past. So  
18 we are seeing some direct petroleum displacement, direct GHG  
19 reductions from behavioral change. That begins immediately  
20 when we open up sites, and then grows.

21           Working with the United States Postal Service, as  
22 Rick mentioned, the federal government has a mandate, but  
23 also challenges around reporting what the alternative fuel  
24 use needs are. We just signed -- we have worked closely  
25 with the Postal Service locally to be able to give them

1 outlets where they can purchase primarily E85, and track  
2 that for them through a product we have called "Clean  
3 Drive." We have our own credit card transaction component  
4 to all of our sites, so it allows us to do some real  
5 interesting things, including tracking to the tenth of a  
6 gallon all fuel usage by anybody who will allow us to do  
7 that. So in this process, we have signed up and registered  
8 about 800 United States Postal Service vehicles in the  
9 Sacramento area, this is with five locations, 800 vehicles  
10 from the U.S. Postal Service over the last few months.

11 We work closely with Caltrans in their process to  
12 be able to approve retail locations. And I think this is  
13 primarily on the biodiesel side, but also E85. So the five  
14 sites that we opened in the last -- in this year -- have all  
15 been approved. I believe they were the first Caltrans  
16 approved E85 sites and biodiesel sites. I am not sure,  
17 Rick, if you can help put a little color on that. I was not  
18 at the point on this lead, but we put a tremendous amount of  
19 time into working with Caltrans to build through these  
20 initial barriers, to be able to get them to be able to  
21 regularly access retail locations and, as Rick said, I think  
22 Caltrans has got, what, 40 percent of the public fleet fills  
23 at public retail locations?

24 MR. SPERLING: Yeah, that is correct.

25 MR. ELAM: We also partnered with Enterprise Rent-

1 a-Car, which is I believe the largest car rental agency in  
2 California. They have a huge fleet, obviously, and they  
3 purchase a number of flex fuel vehicles every year. They  
4 have encouraged their customers to fill with the E85, but  
5 they have not had any availability, and so no chance to do  
6 so. So we put together a very comprehensive marketing  
7 partnership with Enterprise, including -- you can see, I  
8 think, on the slide some hang tags inside the vehicles, maps  
9 to sites, it looks like even some key chains to create  
10 awareness, and we would like to scale this program up into a  
11 number of other regions and potentially nationwide, but  
12 certainly statewide, when the timing is right.

13           We have also spent a lot of time working with the  
14 local dealerships because, for service, etc., when  
15 purchasing cars, this is where customers talk to folks that  
16 are experts in their vehicle, right? So if there is a  
17 message to be delivered to them that their vehicle can use  
18 E85 or biodiesel, this is an appropriate place to deliver  
19 it. In pursuit of those relationships, we have also built a  
20 marketing component to this where we gave away free five-  
21 gallon fuel cards, so these were cards that you could swipe  
22 at our locations and we would give you five gallons of free  
23 fuel. We had these point of sale offers set up at the  
24 service departments, and then the new car departments of  
25 various car dealerships in the Sacramento area, as well. We



1 have actually thought this has been a really successful,  
2 in these times I guess free fuel is an easy way to do it and  
3 it has been a very successful marketing partnership for us.

4           Also, you hear of green collar jobs, etc., tossed  
5 around quite loosely. We partnered with the local  
6 Conservation Corps, the Sacramento local Conservation Corps,  
7 specifically, to begin job training programs around the  
8 service of our locations, and this includes everything from  
9 cleaning -- I should take a step back -- we originally  
10 started working with them because they are the experts in  
11 recycling programs, and one of the places that has really  
12 been an impossible place for the state to be able to insert  
13 recycling containers is gas stations, and gas station owners  
14 have just traditionally not been interested in having  
15 another hassle on their site. Of course, it fits with  
16 Propel's mission, and so it was very easy for us to do this,  
17 but there are lots of cans and bottles, etc., that just get  
18 thrown into the trash and landfill that need to be recycled,  
19 so we have put these recycling containers at our Sacramento  
20 sites and worked with Sacramento Conservation Corps  
21 initially as a way for them to maintain the sites, empty the  
22 bins, etc. etc., but as we have built out a larger program  
23 with them, we are also doing job training for the technical  
24 aspects of site maintenance, and that includes bringing a  
25 laptop to the site, downloading and doing any sort of repair

1 maintenance on any of the components of the site, doing  
2 any of the regulatory -- the reporting components that we  
3 have to do on every one of these sites, and so we see a nice  
4 future in being able to build this relationship as we grow  
5 statewide. Of course, this is not limited to Propel jobs,  
6 these guys when they come through this job training program  
7 could work anywhere within the petroleum retail industry,  
8 and potentially upstream, as well.

9           We also just finished a consumer survey in the  
10 last couple of months. This is the most comprehensive  
11 alternative fuel user survey that has ever been done in the  
12 State of California, possibly ever been done in the United  
13 States. We did it in coordination with the Sacramento State  
14 Career Center. We had students on-site at our locations for  
15 a few weeks asking a wide variety of questions to a wide  
16 variety of our customers, and I cannot release publicly all  
17 the information that we found, but I potentially could to  
18 staff in a closed session meeting, as Jim and I spoke about.

19           MR. MCKINNEY: Yes, please.

20           MR. ELAM: We have certainly found some really  
21 interesting information clarifying alternative use patterns,  
22 distance, location needs and sensitivity, frequency and  
23 loyalty patterns around pricing and distance and proximity  
24 of location of the retail outlets. And in general, this is  
25 the sales ramp we have seen this year at our five sites, so

1 there is clearly an opportunity today for infrastructure  
2 at the retail site to be built in the state of California,  
3 to meet the goals of AB 118. And what we are finding at  
4 Propel is that we are increasing sales and increasing usage  
5 dramatically month over month.

6 We also -- I think it is important to recognize on  
7 the infrastructure side, especially on a retail side, that  
8 this is not an E85, it is not a corn ethanol infrastructure.  
9 It is today, but you have more flexibility on the  
10 infrastructure side and the storage side to be able to  
11 create demand for and accept next generation biofuels than  
12 probably in any other component in the supply chain. I  
13 guess, Mark, you would say that also, in internal storage  
14 and delivery, that is the same, as well. But about having  
15 those true markets and customers on the end asking for more  
16 renewable fuels and more low carbon fuels becomes very  
17 difficult for the technologies to begin to reach the  
18 marketplace. So the way Propel does our business where we  
19 do land leases around specific and build specific locations  
20 for fuel distribution, currently it is the E85 and  
21 biodiesel, but certainly that could be next generation  
22 biofuels, as well, as well as hydrogen and electric vehicles  
23 when and if those technologies become realistic. So we  
24 think the opportunity to build viable long-term end user  
25 markets for low carbon fuels is now. And what we are seeing

1 from the data and hearing from the large fleets,  
2 especially in the public sector, is that they want access to  
3 these fuels, and we feel like this should really be a focus  
4 of where funds are spent out of AB 118, to show real  
5 progress towards objectives of lower carbon, economic  
6 growth, petroleum displacement, etc. etc.

7           So I guess my question at this point,  
8 understanding that this is the second Investment Plan, this  
9 is the meeting for the second Investment Plan, Peter,  
10 correct?

11           MR. WARD: Yes.

12           MR. ELAM: Yeah. So I guess the question is what  
13 happened to the first Investment Plan? Because, to my  
14 knowledge, there have not been any dollars spent so far, or  
15 maybe there have, but certainly not in the sectors that were  
16 helpful to us. So I would say the award timelines have been  
17 delayed. I am not sure what has happened with the matching  
18 strategy, but it does not seem to have been successful in  
19 tracking additional federal dollars into the state of  
20 California. And an issue that I will speak to quickly here  
21 is that I think there is a serious issue that needs to be  
22 addressed, which is that the VCs in the state of California  
23 in the Cleantech side, and private investment, are becoming  
24 very nervous around how this program is moving forward.

25           Last week, at a Cleantech conference in Boston, I

1 do not want to speak for Marianne Wu, but there is a  
2 concern about how this ARRA stimulus funds are being spent  
3 in the Cleantech space. We see companies receiving stimulus  
4 funds need to be able to have a long-term competitive  
5 impact, and a feeling that money is being spent in the wrong  
6 types of industries. And so if you are asking for the  
7 private sector to invest alongside opportunities for growth  
8 to reach the program goals from AB 118, I think we need to  
9 get back in line with how the private sector is valuing  
10 these opportunities and doing diligence, specifically doing  
11 diligence on these opportunities. I think there needs to be  
12 in line with AB 118 in the State of California and where  
13 these funds that are coming in from the stimulus are going.  
14 Are those programs that are being awarded funds in alignment  
15 with AB 118 program goals? More specifically, did those  
16 programs score the highest from staff in the AB 118 scoring  
17 criteria? And if not, why are we giving them money? So I  
18 guess, again, on the cost match, which is the first -- which  
19 is I guess the first Investment Plan, which I guess we are  
20 talking about the second Investment Plan, but I could be  
21 allowed to go back and talk about the first Investment Plan,  
22 I think there is a lot of concern that the decisions around  
23 AB 118 spending has been abdicated to the DOE, and the  
24 feedback that I am hearing from inside the industry is that  
25 these DOE decisions have not been strongly received. And I

1 would hope for at least, at the very least, a pause button  
2 inside the AB 118 initial spending since it has not happened  
3 yet, to make sure that those projects are indeed aligned  
4 with what staff believes to be the best allocation of the  
5 dollars towards the objectives of the AB 118 program.

6       Within the retail infrastructure component of this, I  
7 think you are hearing that there is a demand for -- there is  
8 real demand out there for alternative fuels. The market is  
9 growing. And I think what you are hearing from people like  
10 Mark Sperling and I, and also from Rick, it is his number  
11 one issue that he listed, is costs around being able to  
12 build these out in front of the market. This chicken or egg  
13 issue, we are going to need to grow the market, but it is  
14 not quite there for the capital to be fully deployed -- the  
15 costs are still high, that the state can provide great  
16 assistance in being able to mitigate some of that risk for  
17 the private sector in allocating some dollars towards the  
18 build-out of the retail component. And I think, clearly,  
19 supporting the most viable ideas and companies is something  
20 that there is a great opportunity to do here, and I think  
21 staff has spent a lot of time meeting with a lot of folks,  
22 and hearing a lot of great ideas, and have their own ideas,  
23 as well. And I think that it would be great to get back on  
24 the same page around the allocations of AB 118 dollars and  
25 recognizing the opportunities and solutions that are

1 available. And that about sums it up. I have included a  
2 bunch of informational slides which will probably be on the  
3 website later on. Thanks.

4 MR. MCKINNEY: Great, thanks very much. If you  
5 could stay up there for a second. So I want to say thank  
6 you, first, for providing feedback on AB 118, that is  
7 something we asked for all the speakers, so I am very  
8 appreciative of your candid feedback there.

9 MR. ELAM: Thanks, Jim.

10 MR. MCKINNEY: And another question, so you have  
11 got the five stations now in the Sacramento metro region,  
12 and I did not get a chance to really absorb the data from  
13 your sales slides, but could you say generally, are sales  
14 kind of meeting your model projections for those stations?  
15 I mean, do you feel encouraged or discouraged?

16 MR. ELAM: We are very encouraged with the sales  
17 and, in fact, looking at the state overall, we have a lot of  
18 data, as you know, about where the vehicles are located and  
19 fleets, etc. that would be interested in using alternative  
20 fuels. And Sacramento, while it ranks high, is not ranked  
21 the highest. So we think there are even better  
22 opportunities statewide, particularly in the south, to open  
23 up retail infrastructure. And I would say that we are close  
24 to being able to see viability over time of the fundamental  
25 business models around this, that will ease the need for

1 public participation in the cost side of building these  
2 out. And so the faster that we can get to that point, I  
3 think the better we will see the transition of dollars  
4 allocated can go for more of an infrastructure side as those  
5 businesses begin to stand on their own two feet, maybe  
6 towards upstream and technologies to get the technologies  
7 that have been developing in the lab, as we speak, now and  
8 need to scale into a scale position. But I think when you  
9 start to get close, like you see the retail guys are like,  
10 we are encouraged.

11 MR. MCKINNEY: Well, again, thanks very much, Rob.

12 MR. ELAM: Thank you.

13 MR. MCKINNEY: We appreciate this discussion. We  
14 do not have any specific questions for this panel. Pilar,  
15 any question on WebEx?

16 MS. MAGANA: We have a presentation.

17 MR. MCKINNEY: Oh, my gosh. I am so sorry, I  
18 forgot. Blue Sun Energy, and who is the gentleman?

19 MS. MAGANA: Steve Bond.

20 MR. MCKINNEY: Are you cued up, Steve?

21 MR. BOND: Yes. Can you hear me?

22 MR. MCKINNEY: We can hear you fine. We are  
23 waiting to get your presentation on screen. Okay, and does  
24 he have control over the slide presentation?

25 MR. BOND: It looks like I do, thank you.



1 MR. MCKINNEY: Okay, Steve. Would you introduce  
2 yourself and take it away?

3 MR. BOND: Good, thank you. My name is Steve  
4 Bond. I am with Blue Sun Energy. And we would first like  
5 to thank the CEC for having us here today, and thank all the  
6 attendees for your time, and what we are doing, working on  
7 here is important, and we are glad to be a part of it. Sean  
8 Lafferty also, our VP of Technology, will be joining us for  
9 any questions at the end of the presentation.

10 So moving forward here, the problem is to find the  
11 markets in California and shape to meet state policy goals  
12 for those [inaudible] and biofuels. And we think what  
13 California requires is an infrastructure that provides three  
14 things, and those are a quality product that users can rely  
15 on, service and support for the distributor and the end  
16 user, and enabling technology such as blending units for  
17 fuel, retail of the infrastructure, as we already heard  
18 about today. So [inaudible] is talking about biodiesel, and  
19 then upstream, midstream, and downstream requirements that  
20 further enable biofuels in California.

21 So a couple key points on biodiesel. First, it is  
22 easy to use and ready right now for using diesel engines  
23 with no modification. [Inaudible] to the game, and  
24 [inaudible] such as carbon monoxide, nitrogen oxide, sulfur  
25 dioxide, and [inaudible] matter, and so on, which is

1 important, as well. And it also meets the CEC program  
2 objectives as you have listed here. One thing that Blue Sun  
3 does, which I think is important and aligns with what can  
4 happen in California, is that it is important for an end  
5 user to have a fuel that they can trust. I think from the  
6 early years of biodiesel, there were a couple of misfires  
7 and, of course, new stories on those that have probably  
8 [inaudible] and those days are getting more behind us  
9 because of companies like what we are doing. So it is  
10 looking at the quality side, so once a user decides to  
11 [inaudible] alternative fuel, in our case, biodiesel, you  
12 know, a positive experience all the time so they trust the  
13 fuel, that is what they get from diesel right now, and they  
14 have to **[inaudible - people in audience talking over speaker**  
15 **on WebEx]**. So, you know, companies that are going to be  
16 marketing fuel in California, it is important that they take  
17 an approach to have a quality fuel. So what we look at  
18 doing is, I mean, from the production side, we have specific  
19 specifications that we [inaudible] and what it helps us do  
20 is make sure that, at the start of the whole supply chain,  
21 that we have got a good product. So we have a Blue Sun D100  
22 specification. In addition to what we do on that, is we  
23 have a DTX additive which improves some of the aspects of  
24 biodiesel for reducing emissions, increasing performance, it  
25 helps maintain fuel quality that goes down the supply chain.

1 We [inaudible] which is important that every drop of the  
2 fuel is [inaudible] its quality. And perhaps most  
3 importantly, we focus on training and supporting downstream  
4 fuel distributors, retail end users, to guarantee the  
5 quality of the fuel because, in transportation, the  
6 cleanliness of the tanks, all of that is important in making  
7 sure that when the fuel is actually used in the engine that  
8 it is performing as good as it can, and so I think that is a  
9 pretty important aspect of what is going on in the market,  
10 is just having a quality product. And that will help us  
11 with functioning markets and ultimately in the end use by  
12 the end user.

13           So, briefly, upstream, we recognize that, in the  
14 near term, out-of-state biodiesel is probably going to be  
15 required while in-State capacity is being developed. And on  
16 the previous slide, you can see that in-State production is  
17 one of the goals of the CEC. We urge the CEC not to  
18 penalize out-of-state biofuels purely on the industry's  
19 develop as capital markets and just perhaps just people  
20 slowly get into it, or are not creating an in-State capacity  
21 quite as fast as might be possible otherwise.

22           Moving on to midstream requirements to help  
23 biofuels in California, this primarily includes distribution  
24 terminals and there are more than 50 large petroleum product  
25 terminals in California, and each of those is going to

1 require retrofit to enable blending of alternative fuels  
2 like biodiesel, storage tanks, adequate electrical, etc.  
3 One of the things we do, as previously mentioned, is ratio  
4 blending, so that is something that would have to  
5 [inaudible] ability to do that, as well. As you can here,  
6 it can be quite expensive, you know, potentially \$3 million  
7 per retrofit. It could be \$150 million in the market to get  
8 biofuels to all parts of the state. And I think people have  
9 done a great job today at pointing out the infrastructure  
10 needs, and I think the CEC's continued support there is  
11 going to help make biofuels a reality in California.

12           So moving to the downstream, I have covered a bit  
13 of this as far as fuel quality being critical. So as the  
14 product moves to the end customer, quality has to be ensured  
15 for the customer to keep using the fuel. And one of the  
16 things in that is downstream fuel distributors are going to  
17 have to be a part of the quality assurance chain. For  
18 example, assuring clean storage tanks that cuts rotation,  
19 and this would require fuel marketers such as Blue Sun to  
20 manage, support, and train their distributors in a close  
21 relationship, is something that we believe in so we keep in  
22 close touch with the distributors to ensure a good  
23 consistent end user experience. And that is going to be  
24 important in California. And I think user education has  
25 been previously mentioned, and that is for the end users,

1 the retailers, as well as the distributors, and also  
2 supporting fuel marketers such as Blue Sun in our efforts to  
3 maintain fuel quality through educating everyone involved in  
4 the distribution chain. Also on the downstream, then, are  
5 California's approximately 10,000 retail sites. About 30-40  
6 percent of those carry diesel and, of course, it can be an  
7 expensive proposition if you -- I mean, you have to have  
8 roadside signs, you have to have materials to educate the  
9 user about the fuel. It might be one of their first  
10 exposures to it in detail. And for instance, we have  
11 launched retail sites where just the signage and getting the  
12 whole place up and running the fuel can be about \$3,000 or  
13 more, and plus the retail site has to put in an additional  
14 tank because if they just have a gasoline and diesel tank,  
15 fuel for biodiesel will be additional, they might need to  
16 put in an additional underground storage tank, so it is a  
17 double wall that can be at the highest \$40,000 or more. So  
18 it can be real expensive there. So, again, it comes down to  
19 infrastructure support that is important to really get  
20 everything running for biofuels in California.

21 So some other issues we see with biodiesel, there  
22 are -- one of the things, too, at this certain market is to  
23 be a verified biodiesel emission control strategy. It is  
24 potentially very expensive for the test process. That is  
25 one of the things we feel the CEC can do is provide

1 assistance to get biodiesel approved, essentially, with it  
2 being that expensive, with the committing to going through  
3 all those tests is pretty daunting. One of the things -- I  
4 mean, that can help. You know, there has been testing,  
5 biodiesel has been around, national laboratories have tested  
6 the fuel, and I think a good deal of that can go toward  
7 proving biodiesel as a Vdeck without accompanying  
8 -- having to look at the response to the associated testing.  
9 And then, finally, I believe that already one of the things  
10 that is going on are supportive biodiesel plant testing by  
11 the CEC as far as engine towers and storage tanks, and we  
12 believe that continued support of that is important. One of  
13 the things that is going to get manufacturers and, you know,  
14 as far as approval for storing an underground tank, are the  
15 results from third-party tests. So that is also something  
16 we see as being very important. So with that, that wraps us  
17 up and brings us to the end of our presentation from Blue  
18 Sun. So, again, thank you for your time today and for the  
19 participation in the process. And we would like to take any  
20 questions you have at this time.

21 MR. MCKINNEY: Great, thank you very much, Steve.  
22 Your presentation came through very clearly, good set of  
23 slides. Jim or Pete, do you have any questions for Mr.  
24 Bond?

25 MR. WARD: Thank you again for your presentation.

1 I had one question. You mentioned the \$3 million estimate  
2 for the terminal, and earlier today I think we heard a \$2  
3 million estimate. And I am sure you do not see the  
4 economics of the person that mentioned the \$2 million, and  
5 he has not seen yours, it is a pretty large ballpark between  
6 \$2 and \$3 million, each, so I do not know how to reconcile  
7 that, but I take note of it. Is there something different  
8 from your perspective that requires a \$3 million investment  
9 as opposed to a \$2 that we heard earlier?

10 MR. BOND: Okay, and I guess for that question, I  
11 think we have our VP of Technology who is on the line. Sean  
12 are you there?

13 MR. LAFFERTY: Yes. The question was the  
14 difference between the \$3 million estimate that we had in a  
15 previous presentation, aside of that \$2 million?

16 MR. WARD: Correct.

17 MR. LAFFERTY: We have done through another  
18 partnership an estimate on terminals and \$3 million was the  
19 average that we came up with. It is going to vary from  
20 terminal to terminal, and some terminals may have existing  
21 space in their tank farms, or existing tanks and have a  
22 shorter pipe run from that tank to the rack, and depending  
23 on where you are in California, you may need to even end  
24 play [phonetic] that tank. So it is going to vary from  
25 location to location. I think with that range of \$2 to \$3

1 million, you know, a good first cut, and each site is  
2 going to need its own specific engineering to get to the  
3 correct number.

4 MR. WARD: Your \$3 million estimate was for a  
5 California terminal. I notice you said for the heating of  
6 the tank. Is that going to be required in California,  
7 unless you are in the mountains?

8 MR. LAFFERTY: No, our -- when we did it for  
9 California, that \$3 million estimate did not include heating  
10 of the tank. But it did have a significant, you know,  
11 distance of pipe from the tank to the loading terminal,  
12 loading rack.

13 MR. WARD: The estimate is based on California  
14 permitting and design and that sort of thing, correct?

15 MR. LAFFERTY: Yes.

16 MR. WARD: Thank you.

17 MR. MCKINNEY: Okay, Steve. Again, thanks very  
18 much. I do not think we have anymore questions up here. Do  
19 we have any questions from WebEx for any of the panelists?

20 MS. MAGANA: Not through chat, but I can unmute  
21 everyone. Everyone is unmuted if you want to ask of them.

22 MR. MCKINNEY: Okay, do we have any questions for  
23 this panel from the WebEx audience? Or from the audience  
24 here? Okay, thank you very much, gentlemen. Very  
25 informative and we really appreciate you taking the time to



1 put together the informational presentations and share  
2 them with us. We are scheduled now for a break. Why don't  
3 we take 10 minutes, stretch, bathroom, coffee upstairs,  
4 rendezvous, if you like. So we will reconvene at, say, five  
5 minutes to three.

6 [Off the record at 2:42 p.m.]

7 [Back on the record at 2:59 p.m.]

8 MR. MCKINNEY: There are just two of us that will  
9 be speaking about sustainability. Again, I am Jim McKinney.  
10 My main job here is Team Leader for the Sustainability  
11 Program for AB 118. So I want to run through that quickly  
12 and then give you kind of a status report and some next  
13 steps on where we are going. And then, after that, Steve  
14 Kaffka, who has really emerged as our kind of principal  
15 advisor on sustainability issues, from University of  
16 California at Davis, I always look forward to what he has to  
17 say, so extra encouragement for me to get through this so I  
18 can get to the fun stuff.

19 So this slide, Peter showed you before, and I put  
20 this up here again, this is the California kind of Nation  
21 State Statistics. But while it is impressive and makes us  
22 all feel proud, I like this slide because it really shows  
23 some of the risks inherent with rapid transitions to  
24 alternative fuels and some of the unanticipated  
25 environmental damage that can occur from that, as the number

1 of vehicles, the number of gallons, and the number of  
2 dollars associated with both those components are really  
3 strong economic forces, and so I take that very seriously  
4 when I try to think through the sustainability issues.

5 Our current Chair, Commissioner Karen Douglas, or  
6 Chairman Douglas, made these statements at the CalSTART  
7 Conference earlier this year, and she and her advisors, and  
8 Commissioner Boyd and his advisors, are all cognizant of  
9 this. So, again, the concern is that "a rapid transition  
10 without paying attention to what we're doing can lead to  
11 some potentially destructive practices," and we have seen  
12 this. We have seen this with South American cane ethanol,  
13 oil palm in Southeast Asia, and here in North America, with  
14 corn, the explosive growth in acreage to corn. So Chair  
15 Douglas has made it clear that we are going to apply  
16 sustainability to every piece of the 118 program.

17 In crafting this, we really wanted to focus on  
18 incentives, and not on punitive measures. It is public  
19 money, so we think we have an obligation to set high  
20 standards for how it is used. And because of that, again,  
21 kind of our strategy here is to try to create the right side  
22 of incentives to create exemplary or model programs both for  
23 the California, the national, and international levels.  
24 This was the language from the AB 118 statute a couple years  
25 back, directing us to establish sustainability goals, and

1 use a full fuel cycle analysis, and watch out for  
2 impediments to natural resources. So what we did is started  
3 our initial focus on bioenergy crops and biomass resources  
4 because that really is where the concern is these days, that  
5 is where most of the environmental damage has occurred, and  
6 most of the concerns from the environmental community and  
7 other NGO's or government agencies. So we are starting here  
8 in California, again, working with Steve and his colleague,  
9 Sonya Yeh, U.C. Davis, our colleagues at the Air Resources  
10 Board, colleagues at the University of California, Berkeley,  
11 now Stanford, and U.C. Merced, so we are kind of expanding  
12 our network of informed advisors, people doing the cutting  
13 edge work in different parts of this. We are tracking what  
14 is going on nationally and internationally and we are  
15 looking hard at the RSB Program and RSPO Programs right now,  
16 they seem to have a lot of action. We also have some  
17 funding money available for AB 118 research.

18           People ask what factors -- what do we mean by  
19 sustainability. This is kind of the broad list of factors  
20 that we look at, so GHG emissions reductions programs, so  
21 that is high, energy balances, criteria emissions,  
22 biodiversity issues, issues on lands, whether it is land use  
23 change in the Ag-urban area, or in wild lands, water use,  
24 waste water discharge, those are extremely important in  
25 California, ecosystems for sensitive species, forest cover.

1 Down here in the economic factors and social factors,  
2 these are not things that we are focused on, per se, in  
3 California, it was kind of that classic trilogy of the  
4 environmental, economic and social factors. But one thing I  
5 learned well last year and took to heart is that, on the  
6 economic side, we do not just think about impacts, we think  
7 about economic development and benefits, and you think  
8 really carefully about what we are asking of industry  
9 because we are here to help industry kind of get  
10 commercialized, get ready to go to the commercial step, and  
11 we are asking them to take an extra step, kind of an extra  
12 green step, and apply the sustainability factors to their  
13 business models. And sometimes that can be quite costly, so  
14 we heard that lesson pretty well, or that message last year.

15           What do we mean by sustainability? This is kind  
16 of the classic one from '87, UN World Commission Report, to  
17 me, these are grand words, "Development that meets the needs  
18 of the present without compromising the ability of the  
19 future generations to meet their own needs." I did not know  
20 -- I have a good idea now what I think that means, but at  
21 the time, I really did not know what that meant because it  
22 was such a kind of a grand philosophy. So what do we mean?  
23 So, you know, coming up to the end of the baseball season, I  
24 think one way to think about what it means is you have got  
25 three umpires that are talking about how you call balls and

1 strikes, and the first umpire says, "Well, I call 'em like  
2 they are," second umpire goes, "Naw, I call 'em like I see  
3 'em," and the third umpire says, "You know, until I make the  
4 call, it ain't nothin'." And that -- I think we are kind of  
5 in between the second and third umps there, that we really  
6 have to interpret and define this in a way that makes sense  
7 for California, for this specific program, for the specific  
8 set of technical issues around alternative fuels and vehicle  
9 technologies.

10 But the way we have thought through this kind of  
11 logically is it probably means doing something better than  
12 we are doing now, and better than what? So better than  
13 current baselines for petroleum production, Ag production,  
14 and natural resources. Well, how much better? What is a  
15 sustainability standard compared to an existing regulatory  
16 standard? That is something we are learning as we go along.  
17 And then what things do we need to measure to know if we  
18 really are trying to identify and fund those projects that  
19 are indeed sustainable? So we have done a lot of background  
20 research and, as I said, we have consulted with a lot of  
21 experts. We have written some concept papers, we are  
22 overdue to release a few more. With that, let's see, Jackie  
23 is not here today. But we have made some recent hires, so  
24 Bill Kinney is a PhD level forest economist, resource  
25 economist, who is making great contributions. Miles Roberts

1 is a new hire. Jacqui Gaskill has taken over for Dong  
2 Young Shin, she is out sick today, though. So we are  
3 finally getting some more staff assistance on this.

4           So some of our key assumptions. Sustainability  
5 means low impact, there is no such thing as a zero impact  
6 energy resource, as you well know. And because of the size  
7 of California's market, the volume of fuels that come  
8 through here, our international transactions, we really have  
9 to think about this globally and not with kind of a  
10 parochial state perspective. A key thing that we realize is  
11 that sustainability does mean trying to identify practices  
12 and production methods that exceed the existing  
13 environmental minimum regulatory standards, and that is a  
14 big deal. Infrastructure and fuel pathways have kind of an  
15 integral connection and, as we reviewed the proposals this  
16 summer, I think we reviewed about 130 of them, we saw some  
17 really great concepts for how to link infrastructure  
18 development with lower carbon intensity fuels, and I really  
19 appreciated seeing that.

20           Again, this question comes up a lot, we heard in  
21 this morning's panels how difficult it is to secure permits  
22 from the major environmental permitting entities here for  
23 air quality, water quality, waste water disposal, waste  
24 resources, etc. They are tough standards, but in my view  
25 sustainability, the legislative intent, was that we need

1 something that goes beyond this, it cannot just stop at  
2 the current regulatory practices.

3           So what is it that we mean exactly as we do this?  
4 This is about as exact as I would like to be pinned down at  
5 this moment in time, but to me, these alternative fuel  
6 production methods and products are ones that are  
7 environmentally superior than the baseline production  
8 methods that are based on compliance with existing  
9 regulatory minimum standards. There are those practices  
10 that maximize inputs of renewable feedstocks and other  
11 resources, and minimize the inputs of non-renewable  
12 resources. They maximize the efficiency and the use of  
13 those resource inputs and they minimize waste streams. So a  
14 big emphasis on renewability and efficient use, really  
15 maximizing efficient use of waste streams or of resources.

16           We have developed a set of sustainable evaluation  
17 criteria that you are probably familiar with and so we  
18 measure sustainability using those criteria, and we learned  
19 a lot of good lessons this year. And kind of at the grander  
20 scale, the ecosystem scale, air basin and water basin, we  
21 want to see after five years, 10 years, or after this  
22 program sunsets, that we really have made a difference, a  
23 measurable difference, in some of these kind of larger  
24 system scales. And, again, we want to try to identify and  
25 encourage those practices that can really serve as models

1 for sustainable production.

2 I think most of you are familiar with this, so I  
3 am really not going to spend any time on this, but we have  
4 our three goals, GHG reductions, environmental protection,  
5 and then market enhancement and development of third party  
6 sustainability certification systems. So, again, I am going  
7 to highlight a few things here. So maximizing the use of  
8 waste streams and feedstocks, this is a Commission priority  
9 and, again, we saw some great examples this year in the  
10 proposals. BMP's, purpose grown energy crops really was not  
11 triggered this year, although we have done a lot of work on  
12 that with Steve and others at Davis and Berkeley, and the  
13 environmental community. Again, water use and waste water  
14 discharge reduction are important. Renewable energy  
15 resources, forest biomass co-benefits, and in the  
16 international arena, these third-party certification  
17 programs usually are the ones that we think have a lot of  
18 merit and we are working to learn more about them. So I  
19 alluded -- I made this point earlier today, but I will say  
20 it again, so the biofuels industry got \$28 out of \$176  
21 million, not a lot of money. All of the emphasis was on  
22 waste stream feedstocks, so biomethane, biodiesel, and  
23 ethanol. So we have our regulatory goals and our evaluation  
24 criteria, but sustainability at the Commission is also  
25 shaped by the way the investment categories are funded and



1 how they are defined. So last time around, there was a  
2 lot of concern about environmental damage from the biofuels  
3 sector, and I think that is one reason you saw such low  
4 numbers here.

5           So here is a little status report, and my thanks  
6 to Miles Roberts for getting this data together for us  
7 today. So we looked at 136 total proposals across six ARRA  
8 categories. Some of these were kind of a good fit with our  
9 categories, others were not, at all. So the sustainability  
10 criteria were triggered when a biomass related proposal, or  
11 feedstock, or fuel type came before us, so that happened  
12 with the Clean Cities category, and of the 42 Clean Cities  
13 proposals, eight had biomass elements. So this chart here  
14 on the right side shows the number of times that these  
15 particular criteria were highlighted. So something I felt  
16 was gratifying, criteria 7, the feedstock waste streams,  
17 eight of eight here had some element of waste streams in  
18 their proposed feedstocks, and that was good. We saw some  
19 interesting stuff on water efficiency, renewable energy,  
20 nothing related to Best Management Practices for dedicated  
21 energy crops, that is what that reference is, nor for forest  
22 biomass management. And, again, some very creative and kind  
23 of innovative proposals to link kind of this growing market  
24 or producers market for lower carbon intensity fuels with  
25 kind of the new infrastructure that we are trying to see.

1 And we will get kind of more status data for you as we go  
2 through this.

3           These are our current kind of efforts now on the  
4 sustainability front at the Commission for AB 118. We are  
5 learning a lot, Steve Kaffka kind of gave us permission to  
6 learn, make mistakes, learn some more, well, we are doing  
7 that, so we are kind of modifying our scoring criteria  
8 really to make sure that they do what they are intended to  
9 do, which is identify those kind of superior sustainability  
10 attributes of the different proposals. Again, I introduced  
11 Mr. Kinney, so he is working nearly full time to help  
12 develop forest biomass sustainability criteria and we are  
13 working through state and Federal Interagency Working Group,  
14 we refer to as IFWG. So there should be more work coming up  
15 there in the fall and through the winter. And there are  
16 just tremendous volumes of forest biomass waste stream  
17 materials potentially available as the state and federal  
18 forestry agencies work to thin the forests and reduce fire  
19 risks, so that could create a quite large volume of material  
20 that would be appropriate for cellulosic ethanol production.  
21 We want to continue evaluating bioenergy crops and, again,  
22 Bill is going to work with us on that. We are starting to  
23 get some very interesting results through our contract with  
24 Lifecycle Associates. We have got a couple of contracts  
25 with them now. One is to try to develop kind of

1 sustainability parameters that are suitable for a GREET-  
2 type model. Water seems to be one that is well suited for  
3 this and they have got some preliminary results for us. And  
4 we are starting a new contract with TIAX to investigate  
5 additional sustainability issues. We also have another big  
6 contract with ICF and LCA to kind of further move the ball  
7 in sustainability. We are overdue for getting our proposal  
8 process up for the Sustainability Research Fund, which is  
9 about \$4 million. We had some very good kind of statements  
10 of interest from the UC's and some of the other academic  
11 institutions, and we just do not have the staff resources to  
12 work on that right now. We want to further investigate both  
13 the Roundtable on Sustainable Biofuels, their program, and  
14 the Roundtable on Sustainable Palm Oil, those are the two,  
15 kind of in my view, the international leaders in this front.  
16 RSPO is currently the only one I think is actually issuing  
17 certificates, and RSB is still developing their program.  
18 And I already mentioned bioenergy crops and forest biomass.

19           Looking ahead, algae is getting a lot of airplay  
20 these days and we will learn some good stuff tomorrow. We  
21 really have not thought through how to develop kind of  
22 sustainability metrics for algae-type projects, so tomorrow  
23 will help with that. Tropical forestry, you know, again,  
24 tremendous opportunity for feedstock production in the  
25 tropical zones, and that really is where a lot of the risk

1 is, as well. So that is something we are taking a hard  
2 look at. And then, looking ahead longer term,  
3 sustainability criteria for electricity and hydrogen, and  
4 then eventually we could get into vehicles and component  
5 manufacturing. So that is pretty much what I had to share  
6 with you today, and if there are no questions, I will just  
7 turn this over right to Steve.

8 DR. KAFFKA: Thank you. Jim asked last week if I  
9 would be willing to give a couple of talks today, and I knew  
10 I was going to want to be at this meeting because it has  
11 been a very interesting meeting. So I said yes, in part, to  
12 get out of those chairs and get up to the more comfortable  
13 ones in front, because it is a long day, I know.

14 I have several things I would like to cover with  
15 you today, so I will just move right along. I am going to  
16 organize my talk this way, with talking about where things  
17 stand, where we might get alternative fuels from at least in  
18 the mid to mid-term in California, short to midterm. Just  
19 some comments about whether I think biofuels can be produced  
20 sustainably in California, with particular emphasis on the  
21 agricultural sources, and then I want to propose something  
22 that I think will help us with this determination of  
23 something that is very elusive, which is what the meaning of  
24 sustainability is, in practice. This is from the RFS2  
25 document that USEPA just put out and what it points out is

1 that there were basically already at the ethanol, or very  
2 near to the ethanol blend wall. And that is going to -- the  
3 needed supply for ethanol in the United States, California  
4 included, if California were to use these sources, is going  
5 to be relatively easily -- will be satisfied pretty much on  
6 the basis of corn ethanol production, more or less from  
7 existing facilities and the ones that are coming online,  
8 including improvement in efficiencies there, so that  
9 additional use of ethanol from alternative sources probably  
10 is going to have to be on a price competitive basis.

11           If that blend limit were raised, that would create  
12 regulatory demand for alternative cellulosic type sources of  
13 ethanol, but really the capacity is there pretty much in the  
14 existing infrastructure and from current processes to meet  
15 those standards.

16           Now, California has a more stringent and is  
17 farther along and has the more stringent program. This is  
18 the Governor ending global warming just last year, or two,  
19 when he signed AB 32 program. It was so easy, wasn't it?  
20 And basically this -- California set itself very  
21 extraordinary standards. In 1990, we were about 14.3 tons  
22 per capita CO<sub>2</sub>. By 2050, we have to be down by order of  
23 magnitude. Now, I am going to retire right about here, I  
24 think, unless the stock market goes completely to heck, so  
25 people coming after me, and perhaps many of us, have quite a

1 challenge ahead of how they are going to actually meet  
2 these standards. It is really a very significant attempt,  
3 and some people have said this amount is quite a bit lower  
4 than people admitted during the Colonial era, you know, when  
5 they were burning wood and using muscle power. So it has  
6 never been done.

7           And I am not sure the public yet fully appreciates  
8 the consequences of those kinds of changes that people are  
9 facing, the kinds of choices they are going to actually have  
10 to make. Now, prior to the recent AB 32, the California  
11 Biomass Collaborative developed a roadmap for leading to a  
12 alternative fuel future, and in one of the scenarios, one of  
13 those scenarios featured had a projection of -- actually,  
14 that should have been moved over, it slipped -- but anyway,  
15 of quite an increase in purpose-grown crops to help the  
16 state meet its biofuel mandates. That was back in 2006 or  
17 so, that that estimate was made. This is from Ken Koyama,  
18 this slide. Basically, these are all the various -- many of  
19 the laws that are governing our future carbon economy, but  
20 there are all these, if you will, aspirations, which is  
21 that, by 2010, there was a public aspiration that we should  
22 produce 20 percent of our biofuels in California, and by  
23 2020, 40 percent. It is not clear to me that we are going  
24 to be able to do that, in particular because of the way the  
25 Low Carbon Fuels Standard is structured. You had a

1 presentation earlier about the Low Carbon Fuel Standard  
2 and its schedule and objectives. The Low Carbon Fuel  
3 Standard basically uses -- I am going to talk really  
4 particularly about the use of the GTAP model for a minute or  
5 two -- to estimate indirect land effects which come with a  
6 carbon cost for the crop-based biofuel production. They use  
7 this model called GTAP, which is just an extraordinary  
8 intellectual achievement that is a world scale, multi-  
9 sectoral, economic model. It is supported by people all  
10 over the world. Of its kind, it is probably the most  
11 interesting and valuable computational general equilibrium  
12 model around. It basically models reactions of the economy  
13 at one point in time. Its results are interpreted as  
14 showing the reaction to the economy in some future period to  
15 one, or a few, external shocks or policy changes like crop  
16 use for fuels. And it makes a bunch of assumptions like the  
17 future is going to be the same as the past, the adjustment  
18 is instantaneous, there is very little technological change  
19 occurring in response. And they show the difference between  
20 two alternatives. But one of the critical things about this  
21 model is that, causalities aside -- and what that means in  
22 this case is that the model just does not solve unless land  
23 use change occurs; so, in other words, the choice of the  
24 model is a choice to assume that land use change occurs as a  
25 function of these activities. It is built in. And

1 basically it is the result of a choice of the model, as  
2 much as the running of the model, itself.

3           So consequently, this is the idea that essentially  
4 is embodied in GTAP, that you get a displacement of corn for  
5 ethanol, it may mean more corn acres, less soybean acres,  
6 the price rises, soybean gets planted on newly cleared  
7 forest land, and that releases large amounts of terrestrial  
8 carbon, and these amounts are estimated using GTAP. But the  
9 reality is far far more complex. I am not an economist and  
10 yet I do this, and I think it is much more realistic, even,  
11 than that cartoon was. There are lots of factors that  
12 result in removal, or set aside of land, or increase of  
13 acreage. There are factors that are independent factors,  
14 there are direct effects, and there are indirect effects.  
15 And, in fact, if you try to look for, measure these direct  
16 effects that are predicted by the model, and in fact they  
17 are quite faint in reality, if they are there at all.

18           This is an example of a land use change model that  
19 tries to embody a number of factors on what is causing  
20 shifting cultivation and population stability or decline, in  
21 this case, in Northeast Thailand, this was created by my  
22 colleague, Ted Foin, on sabbatical with Thai scientists, and  
23 you do not need to understand this, but you have market  
24 issues, you have swidden production levels, you have forest  
25 dynamics, psychological dynamics, you have population



1 dynamics, you have fallow decision makers, and there are  
2 extraordinary complexity here that is completely ignored, it  
3 does not exist; in fact, in these global scale equilibrium  
4 models that are being used to try to essentially model just  
5 this. We also know that there are large amounts of land  
6 resources that are not included in those models, large areas  
7 of land and processes like forest re-growth that are not  
8 accounted for.

9           So how do these models do when it comes to local  
10 circumstances? Well, a corn ethanol plant was built here in  
11 this section of Iowa, and this is the radius at which corn  
12 is drawn to that corn ethanol plant, and this analysis was  
13 done by Mueller et al., just last year. And basically, they  
14 could find essentially zero land use change occurring in the  
15 corn draw area of that ethanol plant, and predictably you  
16 would see some change in the corn and soybean acres, or even  
17 an increase in the amount of cropland that would be created  
18 from forestlands or fallow lands, they just simply did not  
19 see it. The production was taken care of by increased  
20 yields.

21           Recent work by the economists and land use change  
22 experts at the Oak Ridge National Laboratory that is  
23 reported on their website essentially reports that, of the  
24 export and production data, the current data shows little or  
25 no indirect impact from corn grain use for ethanol for U.S.

1 statistics. Trade and export fluctuations that have  
2 occurred during the last few years are similar to previous  
3 periods of demand for ethanol prior to ethanol development.  
4 We are right at about two-thirds or more now of the Energy  
5 Independence and Security Act requirements, so there has  
6 been substantial diversion of corn for ethanol, but without  
7 any effects in these factors. In fact, there is less total  
8 cropland being planted in the United States than eight years  
9 ago, so there is no signal that is effectively causing  
10 increased cropland use in the United States, at least. All  
11 of this means there is little evidence to suggest that the  
12 ethanol has forced crops out of production in ways needed to  
13 drive these indirect effects that are modeled.

14           And this is just a history of the estimates of  
15 indirect land use values that have been out there. The  
16 first was Tim Searchinger et al.'s estimate of over 100  
17 grams CO<sub>2</sub> per megajoule. The first one that CARB did, and I  
18 did not put it on here, was in this area, it was lower than  
19 Searchinger's initial estimate. This is the current CARB  
20 estimate, this is Hertel's -- the GTAP lead author's -- more  
21 recent estimate, this is Tyner from Purdue using GTAP in his  
22 estimates. This is the Oak Ridge estimates using GTAP, and  
23 this is Darlington's National Corn Growers Association  
24 estimate. This is CARB's recent estimate for sugarcane  
25 ethanol, and this is Unica, which is the largest trade

1 association for sugarcane ethanol. They think that their  
2 net carbon gain is actually negative. And this estimate was  
3 not created by them, it was created by MBRAPA, which is the  
4 equivalent of the USDA. So the fact is that -- pick a  
5 number. None of these numbers are terribly robust, but they  
6 are being used as if they were solid numbers to have guided  
7 investment decisions. I do not think this is in the public  
8 interest.

9           So where are alternative fuels going to come from  
10 in California? I want to divert a little bit and not talk  
11 about Ag because part of the California Biomass  
12 Collaborative includes people who are interested in the  
13 forestry issues, and we just had this huge fire in Los  
14 Angeles, this is from other fires in California, but we are  
15 seeing a greater increase in the amount of burning and the  
16 intensity of forest fires, and the reason is because we are  
17 accumulating fuel in California, particularly in some of the  
18 forest areas that rates much larger than removal. And so we  
19 have really quite fuel-rich situations. Now, there are a  
20 number of assumptions behind the biomass estimates I am  
21 going to show you. We have 40 million acres of forestlands  
22 in California; a lot of it is national federal land. A lot  
23 of California is actually owned by the federal government --  
24 12 percent is public forest, and then the rest of it is  
25 private. Now, we are looking at logging, slash, tops and

1 branches, forest thinnings, and so on, mill residue,  
2 shrubs and chaparral. Now these are potential sources of  
3 biomass that are non-Act sources, that might substitute for  
4 Act sources, right? So from the Biomass Collaborative, and  
5 from Rob Williams' work, you can see basically that this was  
6 the estimate of the potential 2007 pre-AB 32 and pre-LCFS  
7 estimates of a certain amount of gasoline equivalents,  
8 million gallons of gasoline equivalent per year from  
9 fielding, seed crops, orchard and vine prunings, landfills,  
10 and so on, but a substantial amount estimated at coming from  
11 forestlands. And here again, you have the breakdown of the  
12 sources by percent. Now, in the EISA, there is a  
13 prohibition against the removal of biomass from federal  
14 lands for energy. Now, the RFS2 has it back in, but it is  
15 not clear what the final outcome of that analysis will be,  
16 so this is at least -- this is in question whether this is  
17 even going to be a source in California, even if it were  
18 economic.

19 But basically, we have not just specific  
20 regulations relative to biofuels, but a whole lot of other  
21 regulations that Jim and others have talked about that, in  
22 net effect, drastically reduce the access to these kinds of  
23 resources. Just recently, there was, well, Plumas sawmill  
24 closed down, there was the last sawmill between Highway 50  
25 and Bakersfield in the Sierras closed down. There is no way

1 to get wood out in those areas, or to process material.  
2 So those effects, those downward effects and downsizing  
3 effects, and here you see some protests about the lack of  
4 water in the San Joaquin Valley, which of course would be a  
5 Ag biofuel source if there were water. So these net effects  
6 make it questionable that some of the things that we have  
7 counted on, in fact, are going to be achievable in the short  
8 run, and certainly mid-term.

9           So who is happy about that? Well, where is our  
10 biofuel going to come from? I think these guys are going to  
11 be having a great party because, if that ethanol estimate  
12 from the Unica and from MBRAPA is reasonable correct, that  
13 is going to be a low carbon fuel available in large amounts,  
14 and we are going to be in the same situation as we are --  
15 just like we are with oil, importing it, and letting other  
16 people get wealthy based on our environmental mandates.

17           So, can we produce biofuels sustainably in  
18 California? All right, this is not California, this site is  
19 Germany, and this is a great brand new ethanol plant, and  
20 what the Germans are doing is they are taking surplus sugar  
21 beets and small grains and buying some maize grain, but  
22 basically managing amounts of production that are over their  
23 European quotas, and taking some of that surplus at this  
24 facility and converting it into ethanol. They are using  
25 some biomass to improve the quality of the power source,

1 which in this case is lignite, which is a low value coal.  
2 And they are making ethanol biogas and electricity in animal  
3 feeds and collecting some nutrients at the end. They are  
4 going to be creating -- this is an integrated bio refinery  
5 -- but they are going to be making it more complex, and they  
6 have in mind to creating some chemical feedstocks, as well.

7           This is just from one of the -- this is just a  
8 hypothetical corn bio refinery concept. Basically, it all  
9 starts with the grain, which is our current process, and  
10 they can do fractionation. Someone talked about de-germing,  
11 or getting bran out, or getting oil out. Anyway, you go  
12 through that, you get your ethanol, you get some distiller's  
13 grains as feed, but other things can happen, there are other  
14 products. You can do specialty chemical fermentation from  
15 some of these byproducts. Once you have got this process  
16 running, you can add a cellulosic process to it, you can use  
17 that for both direct heat, you can use it for anaerobic  
18 digestion for biogas, you can do some cellulosic  
19 fermentation for ethanol, and then there is a whole bunch of  
20 specialty chemical products that might be made, and these  
21 are -- this is in the planning. This is in the channel  
22 right now, not all of it in detail, but parts of this are  
23 already being built out in the Midwest.

24           I put this up to switch gears a bit. I think I  
25 may have shown this before, I do not know, but this gives

1 you an idea of how soils, if you will, agri-ecological  
2 conditions change with landscaped aspect. This is the Delta  
3 and you are just looking across it. And these are the  
4 oldest soils down to the youngest soils, alluvial soils, and  
5 each area has its own character and suitability for certain  
6 kinds of crops. The point that I want to make with this  
7 slide is that all biomass is local, that is, what is  
8 sustainable and optimal, and a set of Best Management  
9 Practices varies with the landscape.

10           So we are doing -- the Biomass Collaborative, with  
11 funding again from the Energy Commission -- is doing some  
12 economic optimization of individual farms and farms with  
13 individual regions, to better estimate the price points of  
14 the actual production potential, taking into account that  
15 kind of landscape diversity. We can evaluate at what point  
16 a new biofuel crop might come in and what it displaces. We  
17 also can get things like very robust estimates in the amount  
18 of water that is being used, what the net effects on water  
19 are, and a whole bunch of other things interesting to public  
20 policy.

21           These LP, partial mathematical programming models,  
22 predict the most profitable combination of crops for farm,  
23 they use constraints like water supply lands, soil, and so  
24 on, and they generate optimum solutions. I will talk more  
25 about this tomorrow, but I will show you a few slides today.

1 So this is a sample LP matrix to maximize profit subject  
2 to these kinds of resource availabilities and costs, and  
3 subject to amounts of constraints like the amount of land,  
4 the amount of water, and so on that is there. There are a  
5 whole bunch of these that put in their variable by farmer,  
6 by region.

7           And these are just some estimates. We are not  
8 finished with this work, this is all work in progress. So  
9 we have been evaluating Canola, which is a winter oilseed,  
10 it is not much grown in California, and sweet sorghum, and  
11 these are the price per ton that some of these farmers would  
12 need, or price per 100 weight, to have that crop become part  
13 of their crop rotation. This is a work in progress, a lot  
14 more can be done here, and we hope to be able to expand it  
15 in the future.

16           Let me give you an example of an economic process  
17 that might lead to biofuel in California. I have talked  
18 about this before, so I will not go into it for the future,  
19 but we do have a salinity problem in the Western San Joaquin  
20 Valley, and maybe some other areas, as well. And one of the  
21 ways to extend the sustainability of crop production in the  
22 world's most productive agricultural region, which is the  
23 Western San Joaquin Valley, is to re-use drainage water for  
24 the irrigation of salt on crops, it helps reduce the amount  
25 of salts that are leaching the deep aquifers.



1           So we have a lot of land out there that is  
2 retired. This is the former Broadview irrigation district.  
3 We have this year a lot of land that is idle because there  
4 is simply no water, probably 300,000 acres, maybe another  
5 40-50 that has been deliberately retired. This land still  
6 has to be managed. It still costs money to do something  
7 with. You cannot just let weeds grow, dust blows, there are  
8 some things that have to be done to it, so there is a cost.

9           This is too detailed to go into, but the point is  
10 -- this is times a thousand -- in-valley land retirement and  
11 drainage water treatment according to U.S. Bureau of  
12 Reclamation estimates is going to cost a huge amount of  
13 money pushing on a billion dollars. The high cost of doing  
14 this should, I think, motivate consideration of more on-farm  
15 drainage management systems, especially given the fact that  
16 you can have cost overruns and environmental excesses and  
17 local operators, we think, will be better at this, at least  
18 my colleagues do, and I do, too.

19           And for 10 years, at least, we have been growing  
20 Bermuda grass on really terribly salt affected land, and it  
21 turns out to be quite productive. It is a very salt  
22 tolerant grass. You might, as you know, in your yard, this  
23 stuff is just tough to get rid of, and that is exactly what  
24 we want here. We have been doing modeling of this process,  
25 data collection and weather management, and so on, and well,

1 just to give you some idea of how this stuff looks, even  
2 on saline land, and we created a simulation model that  
3 estimates crop growth as a function of water and salinity.  
4 We can predict plant growth, trace mineral content, plant  
5 yield, and in this case we also have a grazing model, but  
6 this could be a biomass energy yield model, as well. And  
7 you can feed biomass into lingo-cellulosic bio refineries,  
8 so that you could create ethanol, you might be able to  
9 create -- you might gasify some of the lignin, you might  
10 make a bit higher order of alcohols, you might do Pyrolosis,  
11 you might make other chemical feedstocks. In any case,  
12 Lingo-cellulosic biomass coming from an environmental  
13 remediation activity like re-using drainage water, in this  
14 case, the piece that might be missing, in fact, is the  
15 energy market that allows this to actually all work. This  
16 is just some rough estimates. And, again, I have actually  
17 shown some of these before at Energy Commission meetings, of  
18 the amount of land retirement alternatives and the amount of  
19 ethanol that might be produced instead. These are very  
20 rough. We need to do much more detailed engineering  
21 calculations and, in fact, are starting to do that.

22           So lastly, how are we going to deal with the  
23 demand on one end for biofuels, the need to be mindful of  
24 sustainability considerations, as Jim described, and the  
25 regulatory dilemma that we have with having so many, and

1 often contradictory and, in fact, some unhelpful  
2 regulations? I wanted to just talk broadly about  
3 sustainability. Sustainability means a lot of different  
4 things. It is a big circle. You could put your own ideas,  
5 make your own circles and put them in there. What we have  
6 done with the greenhouse gas regulations is we have said  
7 that this is what counts most, and all the rest of this is  
8 subordinated to greenhouse gas reductions. Now, when the  
9 biofuels program was first getting underway early in this  
10 century, in a serious way, there were a lot of public  
11 objectives that were identified as being served by the use  
12 of biomass. One was the diversification of transportation  
13 fuels, having more domestic sources, and improving national  
14 security. If this conflicts with greenhouse gas reduction,  
15 it does not matter. It will increase rural employment and  
16 wealth. Again, this does not matter if it conflicts with  
17 greenhouse gas reduction. Reduce expensive crop surpluses  
18 -- we have done that with the corn program. Distribute fuel  
19 refining, benefit the environment by reducing petroleum use  
20 for transportation and greenhouse gas issues -- that is the  
21 critical one, but by our policy and any other benefits,  
22 again, are subordinate.

23           So how can we take better account of both  
24 preserving environmental quality and also meeting and  
25 considering a range of public goods that also qualify as

1 sustainability issues? This is a very very difficult  
2 regulatory problem. We really never really tried to do it  
3 before that I can think of, in any particular area. So I  
4 think that we need innovative tools that allow us to  
5 quantify those things that can be quantified, and then to  
6 assess them against each other, and to then choose the best  
7 balance of goods and costs. And so integrative assessment  
8 is a more formal activity that needs to be focused on the  
9 needs of policy makers who have to make these very complex  
10 evaluations of sustainability. It has to be multi-scale and  
11 predictive, it should include field, farm, and landscaped  
12 scale biophysical modeling, integrated with each other. It  
13 should include farm, regional, and sector scale economic  
14 analysis and other social criteria, to the degree that they  
15 can be included. It may include some measurement of social  
16 preference and it has to be, as I said, integrated, where  
17 information from one level informs the next. The  
18 information has to be portable across all these scales.  
19 There are some examples. Europeans have moved along this  
20 line. They have the SEAMLESS Program and, so, basically as  
21 you have increases in scale, and increases of model  
22 complexity from the crop to the field scale, to the whole  
23 farm model to the landscape model, to the market sector  
24 model, and there are feedbacks of these sectors on these  
25 other models. It is creating this kind of seamless, or

1 integrated, holistic assessment system that I think will  
2 help us better, and impersonally and more objectively,  
3 evaluate the trade-offs and benefits that we hope to gain  
4 through our alternative fuel program.

5           This is from the SEAMLESS Program, and you can see  
6 a range of models that speak and can transport to each  
7 other, they have adopted recently GTAP, it is the best one  
8 out there for the purpose that they have it in here, which  
9 is not to predict indirect land use change, incidentally.  
10 So you see an increase in scale here, and biophysical, bio-  
11 economic and social and institutional components. And so I  
12 think that we need to recreate this in California. To some  
13 degree, we are underway at the Biomass Collaborative with  
14 that, we have crop simulation modeling, we have this whole  
15 farm economic analysis, we have the capacity to predict  
16 regional ecosystem effects of crop production. We are not  
17 working yet at a larger economic scale, but our friends at  
18 the ITS are doing that. So I think that would be useful for  
19 policymakers in the state to support the further  
20 intensification of our effort because we have some funds for  
21 doing it, but really not at the level that the state needs,  
22 in my mind, to do the job that needs to help it overcome  
23 some of these regulatory conundrums.

24           Just to end, you always have trade-offs.  
25 Agricultural sustainability is not a yes or no, it is a more

1 or less. And there are always balances associated with  
2 it, and I think this would be true for sustainable forestry  
3 management, as well. So it is really a question of  
4 quantifying what you can, and laying some of the goods and  
5 some of the debits alongside each other, and making more  
6 informed choices. And I think that would be a better way to  
7 inform policy, including sustainability standards. Thanks.

8 MR. MCKINNEY: Great, Steve. Thanks very much. I  
9 always love hearing your presentations. I did have one  
10 question for you, going back to some of the indirect land  
11 use issues you raised. And that is, so this morning we  
12 heard a lot of discussion about cane ethanol in Imperial  
13 Valley and sweet sorghum kind of distributed throughout the  
14 state. Theoretically, how would indirect land use charges  
15 for those crops be calculated?

16 DR. KAFFKA: That is a really good question. The  
17 first thing I would take into account is that I think we  
18 already have some wiggle room, even if we were to accept the  
19 notion that a change in cropping patterns in Imperial Valley  
20 somehow or other affects farming systems elsewhere. And  
21 that is that we have had several hundred thousand acres that  
22 are idle now. Idling those acres should have had the same  
23 effect as a diversion for biofuel. So, you know, we have  
24 that much wiggle room, my opinion is just simply bringing  
25 those acres back into production; bringing those acres back

1 into production would spare the production of land for  
2 sugarcane in Brazil. It cuts both ways. So the GTAP model,  
3 at least in the versions that have existed so far, have not  
4 even accounted for land use in California, it is not in the  
5 system, it is not in the database. In California, largely  
6 specialty crop markets are not considered to have any  
7 significant impact in that global scale, worldwide. And  
8 even so, you can see that GTAP is very weak at actually  
9 predicting land change. There has been negative -- there  
10 have been loss of cropland over a period of time when they  
11 predicted expansion. So I am not sure it is a significant  
12 issue. I think it is a marginal issue and, in fact, I think  
13 that these numbers, as you can see, there is a tendency for  
14 these numbers to be going down to a fairly low level. In  
15 other words, I am not sure, in fact, that those numbers are  
16 going to get large enough to be of much concern.

17 MR. MCKINNEY: Okay, yeah, because that is kind of  
18 my general understanding. So let's say, for example, with  
19 sugarcane in Imperial Valley, you would look at the  
20 displaced crops, which would be alfalfa and some of the  
21 other grasses, so --

22 DR. KAFFKA: Probably sweet -- not sweet sorghum -  
23 - but Sudan grass and maybe regular grass hay.

24 MR. MCKINNEY: Yeah. And to think that that would  
25 have any -- that level of acreage would be changed, if that

1 would have any effect at the global scale for those  
2 commodity markets, to me, that just does not seem like  
3 something you can measure.

4 DR. KAFFKA: Well, how you can even measure it.  
5 You have to remember, some of those grass hays are going to  
6 feed pleasure horses. So are you going to privilege  
7 pleasure horses over a transformed energy fuel economy?

8 MR. MCKINNEY: I will let you answer that  
9 question.

10 DR. KAFFKA: Well, you are the regulator making  
11 the decisions.

12 MR. MCKINNEY: Uh, we are not a regulatory body,  
13 sir.

14 DR. KAFFKA: Well, you are going to try to have  
15 some thought about that.

16 MR. MCKINNEY: Right, right.

17 DR. KAFFKA: I do not want to answer that one. So  
18 horses are lovely animals, people enjoy them, but the fact  
19 is that it is not just, you know, food versus fuel, it is  
20 food versus hay, or horse fodder, or whatever, feed.

21 MR. MCKINNEY: Okay, thanks. Were there any  
22 questions from the audience or WebEx?

23 MR. WARD: I have one question.

24 MR. MCKINNEY: Mr. Ward.

25 MR. WARD: Dr. Kaffka, the upper green diamond



1 there, that is for sugarcane --

2 DR. KAFFKA: That is CARB's estimate -- 42 grams,  
3 I think it was --

4 MR. WARD: In California?

5 DR. KAFFKA: No, that was for Brazil.

6 MR. WARD: For Brazil. And there was no estimate  
7 for California sugarcane at this point?

8 DR. KAFFKA: I do not believe they have one  
9 because you do not really have good quantitative data.  
10 Thanks to joint programs from CEC and CDFA, we hope to do  
11 some measurements ourselves starting as soon as the grant  
12 actually gets finalized.

13 MR. WARD: Thank you.

14 MR. McKINNEY: Anything on the WebEx, Pilar?

15 DR. KAFFKA: I have not been controversial enough.

16 MR. McKINNEY: You have got to kind of clean up  
17 your act there, Steve. Great, thank you very much, Steve.

18 MS. MAGANA: Bill has something to say.

19 MR. McKINNEY: Can you introduce yourself?

20 MR. KINNEY: I am Bill Kinney. I am with the  
21 Energy Commission. I work for Jim, among other things, when  
22 he is not having me do other things. Steve, when you talk  
23 about the circle of the corn, Iowa corn --

24 DR. KAFFKA: Yeah, I mean, that is the Mueller  
25 study.

1 MR. KINNEY: Just, uh, I want to make sure I  
2 understand what you were trying to say, and I think what you  
3 are trying to say is that the amount of acreage devoted to  
4 corn in that circle is roughly the same when they made this  
5 measurement in '08 as it was in '02, or some earlier time --

6 DR. KAFFKA: Not very different, some.

7 MR. KINNEY: Okay, but what I am not sure you are  
8 addressing, I guess I have a question about, is that that  
9 corn is no longer being used for feed, right? It is going  
10 to ethanol, correct?

11 DR. KAFFKA: Yeah, some portion of it, right.

12 MR. KINNEY: Okay, so what would you define --  
13 what kind of an effect would you call that? Is that an  
14 indirect plan use there? Because somebody is going to grow  
15 that feed somewhere.

16 DR. KAFFKA: Well, you know, actually when you  
17 have a distiller's grain component that comes back out, you  
18 are still using it for feed. You are removing the starch,  
19 but you are getting proteins, you know, if you do not de-  
20 germ it, if you do not take the oil out, and so you have  
21 that as part of the energy that animals are fed, and it  
22 actually has in some cases substitutes to some degree  
23 directly through the land, directly through the corn that is  
24 basically going to the ethanol, or in terms of the energy  
25 involved, it substitutes for soybean acres that are avoided

1 being planted because of the energy value, the DGH. So  
2 the fact is that there -- within this just small scale  
3 economy, there has not been significant -- we have not seen  
4 a decline in exports in corn. We have not seen a decline in  
5 the rate of yield increase, we have not seen much in the way  
6 of trade effects that anybody can measure as a consequence  
7 of corn diversion. There are all kinds of adjustments that  
8 people make. Cotton acreage has gone down, but cotton  
9 acreage is going down elsewhere anyway in the Southeast, and  
10 soybean acres are not there. So what does that do? There  
11 are people who spend their whole life, believe it or not, I  
12 was at the National Corn Growers Meeting two weeks ago, it  
13 was very interesting, they spend their whole life watching  
14 corn prices in the trade markets, and these are the kinds of  
15 things we were hearing, the fact that there has not been too  
16 much movement.

17 MR. MCKINNEY: Okay, well, it sounds like there  
18 are no additional questions. So, again, thanks very much,  
19 Steve. I guess I will put my moderator hat back on if that  
20 is okay with Leslie.

21 MS. BAROODY: That is fine.

22 MR. MCKINNEY: Okay. The last part of the program  
23 for today's agenda was to open it to public comment, and  
24 specifically we are soliciting comment on the AB 118  
25 process, or program, or any elements therein, or anything

1 else that speakers today, or members of the public would  
2 like to comment upon. Maybe we can unmute the WebEx?

3 MS. MAGANA: Yes, it is unmuted.

4 MR. McKINNEY: Going once?

5 MR. RUBENSTEIN: Jim?

6 MR. McKINNEY: And if you could state your name  
7 for the record, please?

8 MR. RUBENSTEIN: Yeah, hi. Dave Rubenstein again  
9 with California Ethanol and Power. The one situation that  
10 we have come across in our process of trying to work within  
11 AB 118 and trying to obtain funds to get our development  
12 done was, again, as I mentioned, the ARRA hurdle that we  
13 needed to comply with. In our situation, I think that we  
14 meet all of the criteria to be able to obtain funds under AB  
15 118, which is going to help us build the facility, except  
16 for that one. And interestingly is we do not qualify for  
17 any grants under ARRA for our project. But, once we start  
18 to build a plant, we will qualify for stimulus money through  
19 the federal government and the Department of Energy for a  
20 loan guarantee, actually a very generous loan guarantee, as  
21 well as the Treasury giving us money back for the power  
22 plant side of our company. So we actually get those funds  
23 down the road and we were wondering if we could apply those  
24 opportunities into the AB 118 solicitation now, to be able  
25 to access that. Does that make sense?

1           MR. MCKINNEY: I want to make sure I understand  
2 this correctly. So I think you are saying that, with this  
3 federal loan guarantee program, that if you have a facility  
4 that is up and running, you would qualify for that, but you  
5 need some interim funding to get you to that point?

6           MR. RUBENSTEIN: Right. Which comes first, the  
7 chicken or the egg? That is right.

8           MR. MCKINNEY: Okay.

9           MR. RUBENSTEIN: And actually, the DOE  
10 solicitation just came out, so it is 1703 and 1705 that are  
11 loan guarantee numbers, so we will apply for that, we are  
12 just too early in the process to do that. We should be able  
13 to do that probably in the next six months or so. Thanks.

14          MR. MCKINNEY: Okay, thank you. And, again, going  
15 once? Going twice? I think we will adjourn the meeting.  
16 Thank you again, everybody, for your participation. I know,  
17 on behalf of staff, we really learned a lot and really  
18 appreciate those of you making the trip here to Sacramento  
19 to share your perspectives and information with us, and we  
20 look forward to hearing more tomorrow. So, again, thanks  
21 very much. And we will close the meeting.

22          (Whereupon, at 3:55 p.m., the workshop was adjourned.)

23   o0o--

**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, 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 24th day of September, 2009.

A handwritten signature in cursive script, reading "Peter Petty", is written over a horizontal line. The signature is fluid and stylized, with a long horizontal stroke extending to the right.

Peter Petty  
CER\*\*D-492