

BEFORE THE
CALIFORNIA ENERGY COMMISSION

In the Matter of:) Docket No. 11-ALT-01
)
California Ethanol Producer)
Incentive Program (CEPIP))

Lead Commissioner Workshop On
Advanced Ethanol Production in California

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

WEDNESDAY, AUGUST 1, 2012
9:00 A.M.

Reported by:
Peter Petty

APPEARANCESCommissioners Present:

Carla Peterman, Lead Commissioner on Transportation
James Bartridge, Her Advisor

Robert Weisenmiller, Chair

Staff Present:

Gordon Schremp
Jim McKinney
Tim Olson
Larry Rillera
Pat Perez

Also Present (* Via WebEx)

Panelists:

Lyle Schuler, Calgren Renewable
Eric McAfee, Aemetis
Neil Koehler, Pacific Ethanol
Dave Gilbert, A L Gilbert Company
John Kneiss, Hart Energy
Michelle Buffington, CARB
Steve Kaffka, UC Biomass Collaborative
Scott Janssen, EdeniQ
Jeff Manternach, Mendota Advanced Bioenergy
Beet Cooperative
Brian Pellens, Great Valley Energy
*Russ Teall, Biodiesel Industries

Public Comment:

Corey Travis, Caseus Energy
Tom Koehler, California Advanced Energy Coalition
*John Shears, CEERT
*David Rubenstein, California Ethanol & Power, LLC

INDEX

	PAGE
Introduction and Opening Remarks	
Robert Weisenmiller, Chair	
Carla Peterman, Commissioner	
Overview of Workshop Purpose, CEPIP History and Policy Factors -	
Tim Olson, CEC	
Gordon Schremp, CEC	
Jim McKinney, CEC	26
Panel #1: Corn Ethanol Production and Co-Products Moderator:	
Gordon Schremp, Company perspectives on the importance of CEPIP and rationale for additional funding	29
Lyle Schuler, Calgren Renewable	29
Eric McAfee, Aemetis	50
Neil Koehler, Pacific Ethanol	65
Dave Gilbert, A L Gilbert Company	76
Public Comment	108
Panel #2: Biofuel Market Outlook and Government Policies Moderator: Tim Olson	
Hart Energy - John Kneiss	111
National & California Ethanol Demand Forecast	
Potential role for Brazilian Ethanol and other advanced biofuels	
Remaining issues for widespread E15 and E85 use and potential time lines	

INDEX

	PAGE
California Air Resources Board - Michelle Buffington	127
Status of Low Carbon Fuel Standard	
- Optimal biofuels mix to achieve compliance over the next five years	
Public Comments/Questions	138
U.S. Environmental Protection Agency - Paul Argyropoulos or other Representative	
- Status of E15 waiver	
- RFS potential challenges and mechanisms for adjustment	
- Automaker (TBD) E15 waiver and automotive warranty issues	
- Status of CRC testing program for E15	
- Outlook for availability of FFVs over the next five years	
Panel #3: Advanced Biofuel Production Projects in California and Tie-in to Existing Ethanol Plants Moderator: Jim McKinney	
- California project status, linkage and timing of commercial enterprise, Jim McKinney	146
- UCD Biomass Collaborative, Steve Kaffka	148
Advanced biofuel availability - California outlook over the near-term	
- EdeniQ - Scott Janssen	164
- Great Valley - Brian Pellens	172
- Mendota - Jeff Manternach	186
- Biodiesel - Russ Teall	195

INDEX

	PAGE
Public Comment	203
Closing Remarks	
Carla Peterman, Commissioner	210
Robert Weisenmiller, Chair	216
Adjournment	218
Certificate of Reporter	219

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

2 AUGUST 1, 2012

9:10 A.M.

3 (Recording in progress)

4 MR. SCHREMP: And this is for California and the
5 United States facilities, it's really -- we'll break it
6 down simplistically into two elements: there's corn
7 prices which are costs, feedstock costs, the largest cost
8 to the facilities, and those are primarily impacted by
9 the inventory of corn, not necessarily currently, but how
10 much corn will be in U.S. inventories by the time they
11 start harvesting the new crop. And so that's the end of
12 season inventory levels and, as I'll show you, very low,
13 so that can put pressure on corn prices. And new crop
14 projections, USDA follows this very closely, monthly
15 analysis and revisions of said projections, they start
16 off very well this year and have declined. And you'll
17 see why.

18 The other element of more simplistic assessment
19 of profitability is the Ethanol price, that's the
20 dominant revenue stream for Ethanol facilities, they do
21 sell other commodities, co-products as we call them, of
22 corn oil, Distillers Grains, either wet or dry, wet in
23 the case of California facilities -- a very important
24 revenue stream and I'll be talking about the importance

1 of that.

2 So Ethanol prices, though, can change and they
3 can change by factors unrelated to the Ethanol plants
4 individually, but even collectively; excess production
5 capacity has occurred. There was a heyday of Ethanol
6 production back in 2005, 2006, very high prices, a lot of
7 entrants came into the marketplace, and capacity built
8 rather quickly, meaning it responded. However, since
9 that time, gasoline demand has declined.

10 Economic conditions continue to prove in the fuel
11 economy high fuel prices, and we've seen an excess supply
12 available to the marketplace to meet the demand upwards
13 of 10 percent in the blend. So that has changed the
14 price of Ethanol and actually lowered it, impacting
15 profitability.

16 So I mentioned the other revenue streams and
17 we'll talk about that, but these poor economic operating
18 conditions do result in temporary idling of the existing
19 facilities; in rare cases, the closure and dismantling of
20 facilities -- it happened to a facility up in North
21 Dakota -- but it's a temporary idling, so that helps
22 reduce the excess capacity and help improve market
23 clearing prices. But we expect some more of that could
24 occur over the next couple of months because of poor
25 operating conditions.

1 So what is a measure of profitability, if you
2 will? This is not a complex assessment of all their
3 financials, this is really using certain benchmarks in
4 the industry to have a barometer of where they are and
5 how that changes over time -- improving, staying the
6 same, or actually getting worse. So one measure to look
7 at that is what we call a "crush and spread," and
8 basically you're taking the price of Ethanol, the
9 revenue, minus the cost of the corn, and so, in this case
10 you don't get one gallon from one bushel, you actually
11 get nearly three gallons of Ethanol, so that's why you
12 take your corn price divided by that output of 2.74 we're
13 using, it can be 2.78, 2.8, 2.7, it depends on the
14 Ethanol facility and can fluctuate a bit. So that gives
15 us -- that's our equation we use and this is the data
16 sources you see on the screen that we've been using as a
17 part of the program.

18 But that program, as I mentioned, does not
19 include other revenue streams and costs such as natural
20 gas, which is an important cost if you are drying your
21 co-product with natural gas-fired facility, but if you're
22 having it be a Wet Distillers Grains, then your natural
23 gas costs can be tremendously reduced. So we think
24 that's a better way to go.

25 So here is what that formula looks like, so the

1 blue bars are essentially the per gallon, and that's what
2 we use when we look at -- and this is the per bushel, so
3 you'll notice program started, lowest, crush spread for a
4 particular month going back to January of 2004, and then
5 things got a little bit worse during the program, which
6 is why the money allocated to this program we went
7 through in very quick order. And you can see when we
8 were actually developing the program in the latter
9 stages, we were seeing an improvement in the economics of
10 the Ethanol plants, and so I don't think anyone was
11 really believing that things would actually get this bad,
12 or more recently this bad, months where the apparent AFL
13 crush spread is actually negative.

14 Now, if one were to create a sort of formula to
15 capture some of these other co-processing, important ones
16 like distiller grains, soluble here, it's a "D" in front
17 of that because it's dry. So this is a representative --
18 this is actual prices for Iowa, a very important Ethanol
19 production center in the United States, and it's using
20 sort of a model, if you will, for dry distiller grain
21 facility, in California they're wet, so it's a slightly
22 different dynamic, but the importance or the takeaway
23 here is the relative value of that other co-product has
24 been increasing upwards of 25 percent of their revenue
25 now for the Iowa facilities. So it is very important and

1 it's not captured in our current formula for the CEPIP
2 Program.

3 So if one were to use different sources of
4 information, and we've looked and done research on this,
5 we believe that this would be a more accurate crush
6 spread formula to use, incorporating wet distiller grains
7 and natural gas costs for California facilities. And as
8 you see here, the adjustment is you fill in some of these
9 very poor periods and the profitability is not as bad as
10 it was looking, but not maybe as good as it was over much
11 of the recent past, back in 2008.

12 So that's an over-supply. Production capacity in
13 the United States is nearly 14 billion gallons and was
14 13.1 billion gallons of use in 2001. Now, that's been
15 growing Federal/State mandates for Ethanol, but oxygen,
16 oxygenates, a type of blending component that has oxygen
17 in it to help the gasoline burn more completely, and then
18 reformulated gasoline that has an oxygenating mandate and
19 then MTBE, Methyl Tertiary Butyl Ether was used as an
20 oxygenate, very fungible, no changes necessary in the
21 distribution infrastructure, however, concerns about
22 contamination of ground water resulted in a transition
23 away from that gasoline blend stock, initially in
24 California, and later in the United States. That really
25 kicked up the demand for Ethanol. But we do expect a

1 plateauing to occur. There is a limit in the Renewable
2 Fuels Standard Program, the Federal Program for
3 traditional corn-based Ethanol, and as I mentioned
4 earlier, gasoline demand has been declining with a 10
5 percent blending cap currently and will limit the amount
6 of additional Ethanol that comes in the system, unless of
7 course you change some of those dynamics.

8 Now, we've seen as a consequence lower prices,
9 and so that's sort of the profitability across the board.
10 Here is the blend wall, the dotted line, 10 percent
11 blend, you see where it goes a little above a couple of
12 months, this is essentially blending of E85, that's how
13 you get more Ethanol into the gasoline -- U.S. gasoline
14 pool -- than an E10, a calculated E10 limit. However,
15 E85 is something that can be cyclic and, when it's
16 favorable to blend, or unfavorable. What do I mean by
17 that? When someone has a flex fuel vehicle and fuels up
18 with E85, the energy content will be less than filling up
19 with E10, and it's between 23 and 20 percent, so that's a
20 fuel economy penalty. So that means that E85 -- and we
21 see this in the data -- that E85 retail prices are
22 discounted nearly that amount and, so, to be able to sell
23 that and, you know, make a profit and cover your costs,
24 you need discounted Ethanol in the marketplace.

25 And what we've seen recently with the run-up in

1 Ethanol prices, closing that gap to gasoline has just
2 become uneconomical currently in the United States and
3 California. And so this is not unusual, we've seen this
4 before, in particular in 2011. It was only favorable
5 about a third of the year in California. And now it's
6 maybe about 45, 55 percent in 2012 to date, but it is
7 cyclic in nature, but there had been earlier in this
8 year, it was very profitable to blend.

9 MR. MCKINNEY: Chairman and Commissioner
10 Peterman, is it okay to ask questions during this
11 presentation? Or should we hold?

12 COMMISSIONER PETERMAN: Well, I would say if you
13 have a clarifying question.

14 MR. MCKINNEY: I do. Gordon, this is really
15 really good stuff -- Jim --

16 COMMISSIONER PETERMAN: Can you identify
17 yourself?

18 MR. MCKINNEY: -- yeah, sorry, Jim McKinney,
19 Program Manager, Alternative and Renewable Fuel and
20 Vehicle Technology Program. Gordon, given what you say
21 about the over-supply and falling prices for Ethanol as a
22 blend stock on a commodity basis, how does that relate to
23 current pricing for E85? I would expect that, because
24 E85 would be available more cheaply, the price would drop
25 at the pump. Is that what we're seeing? Or does your

1 office have data on that?

2 MR. SCHREMP: Well, what we'd be seeing is that
3 earlier in the year, E85 -- excuse me, Ethanol -- was
4 sufficiently discounted compared to gasolines blended
5 with, and it would make a profitable venture to sell E85.
6 The change in Ethanol prices has been more recent,
7 there's been a run-up in Ethanol prices that has followed
8 the rapid increase in corn prices. So it's only a more
9 recent development of a more expensive Ethanol relative
10 to gasoline that has made the ability to blend E85 less
11 attractive and actually unfavorable. But we look at that
12 as temporary. We've seen this before, it does go through
13 cycles. The gasoline in the Ethanol markets aren't
14 symbiotically linked, they don't work in lockstep,
15 they're different market dynamics in play, and they cause
16 those two markets to move separately almost like natural
17 gas and crude oil, now moving separately and de-linked.
18 So we think it's just a temporary condition. Staff has
19 already forecasted during the previous IEPR cycle a
20 significant need for E85 infrastructure because we
21 believe E85 will be necessary to meet the Federal
22 requirements for Ethanol use. And so we think that's
23 important to have, we think there's inadequate
24 infrastructure in E85 currently for California, and so,
25 yes, maybe temporarily uneconomical, but moving forward a

1 necessary infrastructure need.

2 The other part where you can look and see whether
3 Ethanol is in balance or not, excess or tight, is in the
4 export/import difference. And so the red lines are
5 export and, as you see, well above the green bars, and
6 the United States has shifted to a net exporter, in 2011
7 record exporter in the history of the United States of
8 Ethanol and, in fact, the largest exporter in the world,
9 greater than Brazil by significant margins. So this is
10 something that it's an outlet for the facilities that are
11 still operating, that have a lower operating cost. It is
12 an outlet, Brazil has been taking Ethanol last year;
13 other places, Europe, the Middle East, are taking in
14 Ethanol. There is a need out there and so that's being
15 provided. So it's a good outlet, but we would expect, as
16 some additional plant closures do occur that this ability
17 to export will be eroded somewhat. And also, with the
18 recent increase in Ethanol prices, it's made in some
19 cases exports less attractive. So, once again, a
20 temporary phenomenon.

21 So the Ethanol blend wall, the 10 percent blend
22 wall, there was recognition the U.S. was approaching that
23 under our RFS2, with declining gasoline demand. So there
24 is a petition to U.S. EPA, can that blend wall be raised?
25 There is a belief that vehicles can tolerate that, the

1 infrastructure can tolerate a little bit more Ethanol in
2 the system, but let's do testing of vehicles, let's do
3 this, okay. So U.S. EPA reviewed this information, did
4 grant a partial waiver initially in October of 2010,
5 subsequent issuance of a partial waiver that actually
6 brought the vehicle stock that's eligible to use E15
7 according to the U.S. EPA waiver, modeled the year 2001
8 and newer. And that's about two-thirds of the fleet in
9 2011, a significant amount of the existing fleet, but it
10 does not cover everything -- older vehicles and some
11 other types of transportation.

12 There have been other recent moves. Part of U.S.
13 EPA's role was to develop an E15 Misfueling Mitigation
14 Plan, and they have done that, they have issued that, and
15 that essentially involves information at the retail level
16 to inform the consumer that they need to be aware of how
17 old their vehicle is and whether or not they can use this
18 fuel, E-15. And there have been applications as part of
19 this process that you have to apply the U.S. EPA as a
20 seller of E15, and then get permission. So 56 of them to
21 date, or through -- excuse me, July 13 -- and so that's
22 been going up. There is an initial station, ZARCO 66 in
23 Lawrence, Kansas, and they actually, I think, reported a
24 couple days ago the volume of E15 is about 20 percent of
25 their total sales at this point and they expect that to

1 go up. So that's the first station that's done this.
2 And then how much more Ethanol could one get into the
3 system? Well, a theoretical estimate is two-thirds of
4 the 50 percent increase; it's about a little over four
5 billion gallons. But as I mentioned, what makes the
6 biggest disturbance in the market clearing price and
7 helps the profitability is to erase the excess supply,
8 and that's the export volume, about a billion gallons.
9 So if that was your car, about 25 percent penetration.
10 So that would take a while, and I'll talk about why
11 that's not going to happen overnight.

12 There are many restrictions in state regulations
13 against that, so most of the states. And then you're
14 seeing sort of where those restrictions lie, whether it's
15 actual volume limit on the books that needs to be
16 modified, or other fuel specifications that need to be
17 changed, as well.

18 COMMISSIONER PETERMAN: Gordon, just to interject
19 quickly, can you identify what California specific
20 restrictions are?

21 MR. SCHREMP: Yes, I will do that in just a
22 couple slides. So the E15 waiver, there is also a model
23 that refiners use to comply with the Renewable Fuel
24 Standards, that's a federal program, it's about a third
25 of the gasoline in the U.S., so we're about 10 percent,

1 so take that out, so it's about 20 percent in the U.S.
2 So that modeling work would have to be modified to allow
3 for E15 blend in the data.

4 There is a re-vapor pressure, or the ability of
5 gasoline to evaporate and this is during the summer
6 months that you get a one pound waiver, that's not going
7 to be allowed here for Ethanol blends, and so the
8 refiners would have to modify their recipe, take some of
9 the blend components out in the summer months to allow
10 the effluent amount to exceed the re-vapor pressure. And
11 that's something that California already does, so
12 California has already done that in their Regulations.

13 Segregated storage and underground storage tanks
14 and dispensers. Although there are now some retrofit
15 kits coming out to change your existing dispenser to make
16 it tolerable to E25 blends, VARCO has the latest retrofit
17 kit they've announced for their own car series. So
18 that's a less expensive way to modify your existing
19 facility.

20 And the last, very important in red letters, is
21 there are no new vehicle warranties or existing up to the
22 warranty time limit that allow blends in excess of 10
23 percent, so this is an issue associated with litigation
24 that's currently ongoing for the autos.

25 Some other potential disincentives are what

1 happen if someone misfuels, I have all the stickers on my
2 pump and someone is stealing this fuel and they blame me
3 for what they perceive to be damage to their vehicle, so
4 there's that misfueling litigation. They were hoping
5 Congress was going to do something, that could still
6 happen, we'll have to see, and that would help I think
7 pave the way and help retailers be more confident in
8 being able to sell this. So right now it comes down to
9 cost. It doesn't make sense -- what's your liability
10 exposure? And so we'll have to see how this goes out.

11 Now, to your question for California. Yes,
12 California, like the Federal program, has basically a
13 series of equations the refiners use to optimally blend
14 gasoline, they're based on vehicle testing -- fuel
15 properties, emissions from the vehicles, develop these
16 relationships to criteria pollutants and that took a long
17 time. Well, one would have to go back, look at that, and
18 say, okay, we're going to test new vehicles, new
19 formulations that actually contain 15 percent Ethanol,
20 not 10. So this is -- and then hopefully ARB can add to
21 this -- so there today is a multi-year process, probably
22 at least three years. So Arizona, Nevada, something
23 similar, especially for Arizona in their fuel
24 regulations.

25 Corn costs have been going up, production has

1 been going up primarily -- or I would say solely --
2 because of higher Ethanol production in the United
3 States. The other categories of corn use have been
4 either static or slightly declining. So it's really --
5 that's been the driver for higher corn demand. And we're
6 seeing that 2012 was going to be a bumper crop, not
7 nearly record plantings, but a very high acreage planted
8 because of the high price last year; when you anticipate
9 high prices, it makes sense -- that's what farmers do.
10 However, we're seeing conditions for weather have created
11 worsening conditions for the crop development, and so
12 we'll talk about how the yield and the harvest points
13 have been going down and the market prices have been
14 going up, so that's the cost -- the main cost that's been
15 hurting the profitability as of late.

16 So here is the Ethanol or the corn use as a
17 percent of total use, and in 2012, estimated about 40
18 percent of all the corn use in the United States is going
19 to be directed toward creating Ethanol.

20 The end of season stocks are second third lowest
21 back to 1975, and that is what, until the drought was
22 kicking in a lot stronger, putting a very high premium on
23 corn prices above \$6.00 a bushel, so you're seeing that's
24 pretty low and we expect that number to go down further
25 when U.S.D.A. issues their August report and assessment

1 on both yields and production of corn.

2 So the drought is extremely severe. These two
3 slides were meant to show you a change in one month,
4 basically the darker the colors, the worse the
5 conditions. So as I toggle to the next -- one month
6 later -- you see what's happened, it's expanded and I'll
7 go back, and you'll notice up here in Iowa you'll see not
8 that bad, especially in the western part, and then one
9 month later it has spread. And so not only has the
10 drought continued and expanded, it's now 88 percent of
11 the area where the corn is planted. And then we're
12 seeing, well, that's right now. Can it improve? Well,
13 the outlook, the most recent outlooks is no, stay the
14 same or worsen. So this actually stresses the plants
15 some more, it reduces their development and their yields.
16 And so we expect to see that in the August report when
17 this comes out.

18 So how you measure the corn condition, and that's
19 in various categories, so we're just showing you a
20 comparison. Current year vs. previous year. And so you
21 see here very poor to poor, it starts off back in early
22 June about the same as last year, but then starts to
23 deviate because of the drought and that was at a very
24 high level, 48 percent, almost -- I believe that's
25 possibly a record, I believe it is now higher than the

1 worse drought prior to 1988. And you'll see here
2 conditions for good last year stayed within a pretty
3 stable band of 60 to 70 percent was either good to
4 excellent conditions. Last year was a really good
5 harvest and you'll see expectations very high, and then
6 it has been declining. So that has created extreme upper
7 pressure on prices.

8 The other element that will affect the total
9 volume of corn available is the yield. You'll notice the
10 yellow dot is about 146 bushels per acre, lower than last
11 year by a little bit and this will likely go down in the
12 August report that comes out. It was 166 up here the
13 previous month, so that's a very large change in one
14 month because of the drought and the declining condition
15 of the corn crop.

16 So what's happened to corn? A significant
17 increase. This is the Chicago Board of Trade, a month
18 ahead price, and yesterday it closed at \$8.06 a bushel.
19 So a very rapid increase. In 1988, between May and July,
20 the price of corn increased by 40 percent, that was the
21 previous worst drought; this May, two full months to July
22 data, it's increased about 25 percent, so not quite as
23 much, but it's important to point out that in 1988, the
24 end of season inventories, very high. The indices and
25 inventory for this drought, even worse now than in 1988,

1 every low. So there's a potential to have a bit more of
2 an escalation in the corn price affecting profitability.

3 A couple of slides to finish up on AB 118 before
4 Mr. McKinney will come up and augment my comments. But
5 basically there are goals to encourage development of
6 advanced biofuels in California. Moving away from what
7 we call first generation, or you could say "food-based"
8 corn, soy feedstock, to make biofuels, and there's been
9 lots of knowledge, there's been lots of research done,
10 technology development, feedstock analysis that has made
11 dramatic improvement. So we expect that to continue and
12 that's part of the investment strategy. There is a very
13 large resource potential, nearly three billion gallons,
14 and that's just based on the waste-based feedstock in
15 California, so a very important contribution to our fuel
16 supply.

17 As the Commissioner mentioned earlier, a
18 significant amount of projects have been funded, 25, and
19 here is that list broken down by the biofuel investment
20 category.

21 So unless there are any other additional
22 questions now, I'll turn the microphone over to Mr.
23 McKinney.

24 CHAIRMAN WEISENMILLER: Yeah, a couple questions.
25 First is, it seemed like, as you looked at your charts of

1 the value of the Ethanol and the cost of the corn, that
2 it was clear that, as you said, these flip up and down,
3 but that one of the things which the program more or less
4 is doing is hedging for folks that, when they get into
5 those horrible periods, to sort of see them through, and
6 then presumably get some repayment later. How good have
7 our forecasts been over time of either the value of the
8 Ethanol, or the cost of the corn? In other words, we are
9 looking at these bets, do we really have a track record
10 or a sense of how good or bad our bets are?

11 MR. SCHREMP: Well, we don't forecast commodity
12 prices. We will use commodity forecasts by the U.S.
13 Department of Agriculture. We do have alternative fuel
14 forecasts, I would say they are somewhat rudimentary and
15 they do have linkage to the Federal forecasts by the
16 Energy Information Administration. So I believe that,
17 because they are coarser and more simplistic in their
18 outlook, they don't capture these near term and sort of
19 dramatic downturns in the marketplace due to more
20 unforeseen circumstances such as a drought of this
21 severity.

22 CHAIRMAN WEISENMILLER: Well, actually, okay, but
23 I mean, I should have phrased the question differently in
24 terms of looking at the sources for the forecast we're
25 using like, you know, the Department of Food and Ag,

1 which obviously is a much better reason to get a corn
2 forecast correct; how good have their forecasts been over
3 time?

4 MR. SCHREMP: I would say not very good.

5 CHAIRMAN WEISENMILLER: Okay, I mean, that's --
6 the other question, I guess it's more the observation --
7 yesterday we had a press event rolling out over 30
8 studies that were done by scientists in California on
9 climate impact and the basic message to everyone is to
10 expect a hotter and drier future, you know, period.
11 That's the basic message, progressively worse. We
12 certainly encourage everyone to read those reports. So
13 anyone who is betting on not having a hotter, drier
14 future is -- again, it's a bad bet. You know, certainly
15 the trends -- certainly there will be years off and on,
16 but these circumstances could get worse. Also, you
17 noted, just following up, basically at this point we are
18 exporting Ethanol and, so, the question becomes, on the
19 margin, does anything that we do to increase Ethanol
20 production just result in greater exports -- on the
21 margin, obviously, not necessarily from the California
22 sources?

23 MR. SCHREMP: Well, the Ethanol produced in
24 California is a much smaller portion of our current
25 demand requirement and we do not see the California

1 production being exported, so if more California
2 facilities produce -- or, you know, another facility
3 comes on-line, that helps to reduce the need for imports
4 which has a higher carbon footprint. So --

5 CHAIRMAN WEISENMILLER: Right, but presumably
6 someplace else in the U.S., unless there is a reduction,
7 then that additional Ethanol would have to be exported.

8 MR. SCHREMP: Absent a constriction of Ethanol
9 production facilities currently operating, that's
10 correct.

11 CHAIRMAN WEISENMILLER: Now, how does -- just the
12 last question is, you know, obviously I think part of
13 what we all assume is that the Midwest has heavy
14 subsidies for Ethanol production. Do you have a sense
15 for what the scale of that is in terms of, you know, how
16 much of the cost of Ethanol production is being
17 subsidized in the Midwest states?

18 MR. SCHREMP: I think there are two main
19 categories of assistance, one can be assistance at the
20 initial stages of capitalization and development of new
21 facilities. We're seeing essentially no new construction
22 for traditional Ethanol plants scheduled currently. The
23 other category of assistance has been payment programs
24 and they do have a great deal of variability, but I can't
25 answer right now, but we can get back to you on what

1 those programs do look like sort of in the aggregate and
2 in sort of a range of assistance to see actually how many
3 states do currently still have those payment programs and
4 what they look like.

5 CHAIRMAN WEISENMILLER: That would be good.

6 COMMISSIONER PETERMAN: All right, and just
7 following up on that question, I think it's my
8 understanding that the subsidies in the Midwest for corn
9 Ethanol are quite significant, orders of magnitude more
10 than they are in California, so I think we're just trying
11 to get a sense of the scale to develop more the in-state
12 production. And also, could you just confirm, is it
13 correct that, in terms of our own Ethanol usage in
14 California, about 96 percent comes from out of state?

15 MR. SCHREMP: That's correct.

16 COMMISSIONER PETERMAN: Okay, thank you. Mr.
17 McKinney, in the interest of time, will you be brief?
18 Thank you. I want to start hearing from the companies.
19 Thanks.

20 MR. MCKINNEY: Thank you, Commissioner. I'll
21 keep my remarks short. Jim McKinney, again, program
22 Manager, Alternative and Renewable Fuel and Vehicle
23 Technology Program. I'd just like to take a minute or
24 two to flesh out what these projects and investments
25 represent in the AB 118 portfolio for biofuels. We've

1 allocated over \$100 million to biofuels over four
2 investment plans covering five fiscal years, \$70.5
3 million is currently locked into contracts for 25
4 projects.

5 We're a little bit proud of our biofuels
6 portfolio; all of these really do represent, as
7 Commissioner Peterman mentioned in her opening remarks,
8 second and third generation efforts. All of these are 25
9 megajoules -- 25 grams, excuse me -- of carbon intensity
10 equivalent per megajoule -- I still don't have that right
11 -- so very low carbon intensity to values, about 80
12 percent below the petroleum baseline.

13 For biogas, we have a number of commercial
14 projects using anaerobic digestion of municipal solid
15 waste organics. A recent award has gone to Clean World
16 Partners here in Sacramento and also CR&R down in Perris,
17 in Riverside County. The CR&R facility is going to
18 produce 865,000 gallons of diesel gas equivalent from
19 their facility. Clean World is also quite large. And
20 really, the biggest commercial scale plant we're funding
21 is the Waste Management Linde consortium down in Ventura
22 County, and that's going to produce an equivalent of 3.6
23 million DGE equivalent in liquefied landfill gas.

24 For biodiesel and renewable diesel, we have
25 several projects that we're funding that range from

1 Solazyme's advanced technology to produce aviation grade
2 jet fuel based on algae grown in a sugar solution. We
3 have other companies experimenting with Fischer-Tropsch
4 to renewable diesel, and then a couple of really good
5 small local companies converting different waste greases
6 and oils to biodiesel. And on the Ethanol side, a number
7 of cellulosic projects, I think we have three at this
8 point, so AE Advanced Fuels, Aemetis, Kent Bioenergy, and
9 EdeniQ, and these represent a series of pilot projects to
10 use different enzymatic-based cellulosic process
11 technologies on a variety of waste-based feedstocks
12 available here in California.

13 We also have a couple of projects out with
14 alternative feedstocks that we'll hear later from Brian
15 Pellens, Great Valley Energy and his work with sweet
16 sorghum trials, and that is a crop that does well in
17 California, but has very low water requirements compared
18 to other energy crops and commodity crops. And then the
19 Mendota facility, I think we'll also hear from them,
20 which is a very innovative blend of sugar beets and
21 agricultural waste streams producing either Ethanol or
22 renewable diesel. And what's really innovative about
23 them is the farmer collective that's come together with
24 the sustainability plan to ensure year-round production
25 of this very important feedstock. And then the CEPIP

1 grant totaling \$6 million spread across three plants.

2 So, thank you.

3 COMMISSIONER PETERMAN: Thank you.

4 MR. OLSON: Commissioners, we'd like to proceed
5 to the first panel and Gordon Schremp is going to be the
6 Moderator of that panel and will introduce the speakers.

7 COMMISSIONER PETERMAN: Great, thanks.

8 MR. SCHREMP: Thank you, Tim. I'll let the
9 audience here and online know that we have four speakers
10 for this first panel, three from California Ethanol
11 production facilities, and one from a co-product vendor,
12 if you will. And that will be Calgren, up first will be
13 Lyle Schuler, and then second will be Mr. Eric McAfee
14 from Aemetis. And Mr. Neil Koehler from Pacific Ethanol
15 will be the third Ethanol plant representative, followed
16 by Dave Gilbert from A L Gilbert Company. So I guess
17 without further ado, Mr. Schuler.

18 MR. SCHULER: Thank you, Gordon. Thank you,
19 Commissioners, for the opportunity to address this
20 workshop today. My name, as Gordon indicated, is Lyle
21 Schuler, I'm President of Calgren Renewable Fuels. We
22 operate a renewable fuels plant in Pixley, California,
23 midway between Fresno and Bakersfield. We currently
24 produce about 57 million gallons per year of fuel
25 Ethanol. In addition, we produce about 1,200 tons of Wet

1 Distillers Grain per day. As you will hear from Mr.
2 Gilbert, what Distillers Grain, Wet Distillers Grain,
3 WDG, is a valuable feed product, especially for cattle.
4 Our Distillers Grain goes exclusively to dairy farmers in
5 our immediate area.

6 We have repeatedly been told that WDG is the best
7 protein value on the market today.

8 COMMISSIONER PETERMAN: Mr. Schuler, if you don't
9 mind, I'm hearing you fine enough, I think you can get
10 possibly louder. Can you move that mic a little closer?
11 Thank you.

12 MR. SCHULER: Thank you. We also produce a
13 truckload of vegetable oil per day, almost a truckload of
14 vegetable oil per day, mostly poultry feed and to
15 biodiesel producers, some as far away as Illinois,
16 interestingly. It's worthy of note that our plant was
17 originally built, as were the other plants that you'll
18 hear from today, in response to governmental policy
19 decisions and, in this case, it was a Federal Renewable
20 Fuels Standard that Gordon discussed, and to some extent
21 the Federal Clean Air Act. Oxygenate was needed in the
22 fuel at the time that we made our investment decisions.

23 During our four years of operational history, we
24 worked hard to optimize our energy efficiency. We've
25 done so to meet the policy objectives embodied in

1 California's Low Carbon Fuel Standard and to satisfy our
2 BOEG obligation under the CEPIP Program.

3 At the risk of boring you with statistics, we
4 currently produce over 2.8 gallons per bushel of
5 feedstock and consume less than 16,500 Btus of energy per
6 gallon of Ethanol based upon lower heating value basis.
7 To help put that in perspective, when our plant was built
8 five years ago, we were guaranteed it would consume no
9 more than 21 pounds of steam per gallon of Ethanol and no
10 more than one kilowatt hour of electricity per gallon,
11 both of which we were told at the time were industry
12 standards, at least in terms of process guarantees.

13 Today we consume 11 pounds of steam per gallon
14 and we consume .52 kilowatt hours of electricity per
15 gallon. That's roughly half of those guarantees. In
16 part, that's because our process design is quite
17 efficient to a series of pressure reductions, we use
18 steam four times before we finally get it down to pretty
19 much a full vacuum and we can't re-use it again to again
20 evaporate. I do not know what the industry standard is,
21 I suspect it's closer to two or three times, we are all
22 reasonably efficient.

23 In addition, our energy is supplied by highly
24 efficient, ultra-low NO_x co-generation facility, which was
25 part of our investment, a very substantial investment,

1 obviously. We are eager to pursue additional energy
2 saving projects. We currently intend to build a second
3 co-generation turbine so that even greater percentage of
4 our steam can be supplied by waste heat.

5 Both turbines have been certified by the Energy
6 Commission as AB 1613 compliant, allowing us to sell
7 excess co-generation energy to the grid if we could ever
8 get them to interconnect us -- I think we're getting
9 close.

10 In addition, we have plans -- supported by your
11 Commission -- to build a digester to make biomethane from
12 waste produced at a neighboring dairy. This will allow
13 us to reduce the amount of natural gas that currently
14 fires our cogeneration units, further reducing our carbon
15 intensity.

16 The EPA recently released a study indicating that
17 a standard dry mill Ethanol plant using grain sorghum,
18 otherwise known as milo, and you'll hear about sweet
19 sorghum today, please don't confuse the two, one is
20 closer to sugarcane, milo is bird seed. When used as a
21 feedstock in a dry mill Ethanol plant powered by co-
22 generation and fueled by biomethane, the EPA says that a
23 standard plant -- we think we're a little better -- would
24 represent a 53 percent reduction in baseline carbon
25 intensity, which for them is 2005 gasoline. In response,

1 we have embarked upon an ambitious program to acquire
2 grain sorghum for multiple sources. Coupled with our
3 energy efficient design, when our digester is
4 operational, we will be able to produce Ethanol from
5 grain sorghum with a carbon intensity rating equal to or
6 below that of Brazilian sugarcane Ethanol. We believe we
7 may be -- our goal is to be in a position to have 20
8 percent of our feedstock about a year from now supplied
9 by grain sorghum. We think that's an achievable goal.
10 Hopefully we can get the digester built by then.

11 We are also seeking permit modifications to
12 install a biodiesel production facility at our Pixley
13 plant. Using our extracted vegetable oil as feedstock,
14 we believe we can produce some of the lowest carbon
15 intensity biodiesel in California and not have to ship
16 that stuff back to Illinois, to find a processor who is
17 well suited to use it. Besides grain sorghum, we have
18 tested or are testing various other feedstocks such as
19 inedible wheat flour, waste from juice concentrate,
20 potato starch, juice from food drops, and whey permeate.

21 Please note that I have studiously avoided
22 referring to our Pixley plant as a corn Ethanol plant,
23 preferring instead to call it a renewable fuels plant.
24 There's a reason for that. Our plant is comprised of
25 basic process units that would be found in virtually any

1 renewable fuels plant. Besides the electricity and steam
2 generating units I mentioned earlier, we have mills,
3 scalpers, bucket elevators, conveyors, mixers, precise
4 reduction and handling of feedstocks. True, this
5 equipment currently handles corn, but it can handle grain
6 sorghum without any modifications. And it can handle
7 other feedstocks with relatively minor modifications. We
8 have vessels, heat exchangers, pumps, instrumentation
9 valves, to control the biological reaction of feedstocks
10 with enzymes and yeast to create fuel. That equipment is
11 applicable to bacterial conversion should we wish to do
12 that, as well.

13 Moving kind of downstream, we have centrifuges,
14 distillation columns, stripping columns, evaporators,
15 molecular sieve units to separate fuel and recycle water,
16 we don't discharge any water, very efficient in that
17 regard, too, and solid material, the Wet Distillers Grain
18 I mentioned earlier.

19 We currently separate into those streams Ethanol
20 produced from corn, but I assure you those process units
21 don't care where it came from; they are exactly the same
22 units that we would use if we were using a different
23 feedstock.

24 We have a well-equipped lab to measure component
25 concentrations and monitoring them throughout our process

1 using both liquid and gas chromatography, Karl Fischer
2 moisture analysis and various wet chemistry processes,
3 that's equally applicable to any other product, any other
4 biofuel that we would choose to run. And we have a
5 sophisticated control room, kind of reminds me of a
6 little NASA space station.

7 The point is that we would need that no matter
8 what we ran. Obviously, the point I'm trying to make is
9 that the quickest path to next generation renewable fuels
10 is by teaming with knowledgeable operators of existing
11 renewable fuel production facilities, rather than
12 replicating that very substantial investment, which we
13 incurred to get to where we are today. A viable CEPIP
14 Program can help with that.

15 We are huge fans of California's Low Carbon Fuel
16 Standard. Unlike some governmental programs, in our view
17 it establishes a broad policy objective that is the
18 reduction of carbon intensity of fuel, and it establishes
19 a means for scoring entrepreneurial efforts to achieve
20 that policy goal, that is, by allowing for the filing of
21 individual sub-pathways. We applaud this approach; it
22 provides renewable fuel producers with clear objectives
23 and the flexibility of achieving those objectives in an
24 efficient manner -- a commercially viable manner. With
25 all due respect, we believe this approach has advantages

1 for regulatory and legislative attempts to pick winners
2 and losers. Carbon credits under the LCFS have seen
3 little trading and have -- when the trading has occurred,
4 it has not been at substantial values. The few trades
5 that I'm aware of are in the \$14.00 to \$20.00 per metric
6 ton, and that is equivalent to -- I did the math --
7 \$.00095 to \$.0015 per CI point, you know, that's the
8 improvement in grams of CO₂ equivalent per megajoule.
9 That's a lot of zeros.

10 CEPIP is the only program to date that has
11 provided substantial incentive in the form of BOEG
12 requirements to achieve LCF as goals. These mandates are
13 coupled with what we view as the equivalent of loans to
14 California Ethanol producers, to help them through rough
15 patches such as the over-supply that currently plagues
16 the industry and, as Gordon commented upon, we California
17 Ethanol Producers bring good paying jobs into our
18 communities. Our Pixley plant is located in an
19 impoverished area with high unemployment. Each of the
20 projects I mentioned will bring additional good paying
21 jobs into the community.

22 In summary, we urge that you look at current
23 Ethanol producers not simply as corn processing plants,
24 that would be short-sighted -- I assure you it is not the
25 way we see ourselves. We've been very responsive to

1 policy pronouncements in the past. I believe you will
2 find us to be responsive in the future, as well --
3 instead, we urge you to see California's Ethanol plants
4 as stepping stones to next generation biofuels in
5 whatever form they make take, we don't have to decide
6 that today. We further urge you to see the CEPIP Program
7 as a way to create good paying jobs, fulfill the goals of
8 the LCFS, and utilize the entrepreneurial talent that
9 exists in the renewable fuels industry today. I sit next
10 to a couple of these guys right now. Viewed in this way,
11 I think you will agree the CEPIP Program is a good
12 investment. Thank you for your time.

13 CHAIRMAN WEISENMILLER: Thank you. A couple
14 questions. First, you heard staff's presentation on the
15 markets. Is that consistent with your perspective? Or
16 do you have any different perspectives on any of the
17 issues that Gordon covered?

18 MR. SCHULER: I think staff has it about right.
19 There's a lot of dynamics here. I think we expected to
20 see exports at the level it was last year. The drought
21 -- by the way, we would have seen, as Gordon alluded to,
22 we would have seen a very drastic different picture had
23 it not been for the drought. We were expecting to cure
24 the carryover problems, the inventory going into the next
25 part of the season. We had record production. The USDA

1 started out saying they were projecting 166 bushels per
2 acre, on average, and they're way down from that now,
3 they're now talking about maybe, well, USDA hasn't gone
4 this low, but some of the experts are talking about 127
5 bushels per acre. That drive prices up, it's a very
6 dynamic responsive market, and that pushed exports down.
7 At the same time, the Renewable Fuels Standard mandates
8 advanced biofuels -- by the way, would like to meet that
9 objective with the sorghum-based -- or milo-based
10 feedstocks with our biomethane and co-generation -- but
11 right now the only way to do that is with the Brazilian
12 Ethanol, so we've got lots of imports coming in,
13 constrained exports, and consequently the industry is
14 having to react to that by the least efficient plants
15 closing. All of us here at this panel today, all of us
16 Ethanol producers, try very hard to be the last man
17 standing. It's real important.

18 CHAIRMAN WEISENMILLER: Okay. In terms of your
19 -- one of your major costs is obviously corn cost -- have
20 you done any hedging of that on a futures market in the
21 past? Obviously, you would look phenomenally good six
22 months ago and not as good now.

23 MR. SCHULER: Everybody would define "hedge"
24 differently. Our definition of hedge is we do not buy
25 corn ahead unless we can sell Ethanol ahead.

1 CHAIRMAN WEISENMILLER: Okay.

2 MR. SCHULER: And we believe that that's the only
3 prudent way. A very very well-run company called Verisun
4 taught us that, in 2008, I believe it was, when they went
5 bankrupt because they were three months out in terms of
6 their corn and they didn't sell short on the board --

7 CHAIRMAN WEISENMILLER: Right.

8 MR. SCHULER: Right now, corn generally is what
9 they call in contango, it's more expensive in the future
10 on the futures board, and Ethanol is backward dated, it's
11 less value. So, as you go out, it's a bad bet right now.

12 CHAIRMAN WEISENMILLER: Right now or, at least
13 let's say the last six months, what portion of your
14 feedstock is corn?

15 MR. SCHULER: One hundred percent.

16 CHAIRMAN WEISENMILLER: Okay.

17 MR. SCHULER: Modest amounts that we've played
18 around with other feedstocks, as I mentioned, but right
19 now corn is the best deal. We could not be commercially
20 competitive today with any other feedstock other than
21 possibly grain sorghum, and there is some -- there is a
22 fair amount of grain sorghum used in the U.S., there was
23 very little incentive to have it grown here, and I think
24 that's changing now.

25 CHAIRMAN WEISENMILLER: Okay. And in terms of --

1 you're obviously doing a lot of technical innovation, but
2 in terms of your expected pathway, you know, when would
3 you expect, say, to get to 50 percent of a corn basis?

4 MR. SCHULER: Grain sorghum will take us
5 substantially lower. We could file for a sub-pathway
6 today, which would be significantly lower than the
7 default, but the difficulty is the way the sub-pathway
8 filings work, we don't want to leave anything on the
9 table and we have to have a five gram of CO₂ equivalent
10 per megajoule improvement in order to go file again, so
11 we're better off -- because it isn't worth anything today
12 -- we're better off to hold off a little bit and file
13 later.

14 CHAIRMAN WEISENMILLER: Yeah, I guess I was -- to
15 raise that just in terms of thinking, you know, five
16 years from now, would you expect your fuel mix to be 50
17 percent or 100 percent corn if you get all the technology
18 breakthroughs that you're hoping for?

19 MR. SCHULER: It's very difficult to predict.
20 And I appreciate that's your job, but -- and I don't mean
21 to be flippant or cavalier -- but we think one of the
22 advantages of having commercial folks partner, team with
23 you to achieve goals, is that we're very responsive to
24 dynamic conditions. As I mentioned earlier, a year from
25 now we hope to be running 20 percent milo or grain

1 sorghum. Beyond that, it's difficult to tell. We have
2 looked at some other waste products that initially looked
3 interesting, but they came with too much of a bacterial
4 problem, wild yeast, we had to give it up. But it's hard
5 for us to sit here and tell you that we think we're going
6 to be successful with that program in five years, we just
7 do not know.

8 CHAIRMAN WEISENMILLER: Yeah, well, I think it
9 was difficult to predict, particularly to forecast the
10 future, difficult to forecast particularly about the
11 future. But having said that, typically when one looks
12 at investments, one has to do that, and one of it is,
13 indeed, looking at the partnerships, trying to identify
14 the major risks, and then seeing if the parties that are
15 bearing those risks in the transaction, you know, have
16 the capability to deal with that. And so in this area,
17 you've got the technology, but obviously one of the key
18 risks is that gap between the cost of corn and the value
19 of the product. And again, just trying to figure out how
20 that can be hedged.

21 MR. SCHULER: It seems to me -- again, with all
22 due respect -- but there's a prejudice against corn-based
23 -- corn as a feedstock. And frankly, its starch content
24 of over 70 percent, the fact that we sort of borrow that
25 starch, preserve all the proteins, a third of that bushel

1 of corn ends up as Distillers Grain and all the proteins
2 are preserved, so Distillers Grain is three times the
3 protein content of corn. It doesn't have what the feed
4 guys call "energy" -- as much energy -- because we took
5 the starch out; but for dairy cows, excess starch can
6 cause acidosis and several other problems, it's actually
7 a very nice feedstock. I think that, with all due
8 respect again, I think that some of the anti-corn
9 prejudice perhaps is not as well-founded as you would
10 think the more you get into it. Now, the point I'm
11 trying to make, though, is that to the extent there would
12 be another -- an alternative feedstock that is
13 commercially viable and acceptable, the Distillers Grain
14 from milo comes out a little darker, it actually has a
15 nice protein profile, and we think it works, we have to
16 go through a marketing program with our purchasers to
17 make sure that darker color doesn't bother them, but
18 we're willing to do that -- the point I'm trying to make
19 is that corn currently leads to a commercially viable
20 renewable fuel and, as we find ways to efficiently grow,
21 collect, and process through enzymes -- some of my
22 competitors here are doing a very good job of developing
23 -- we will be ready to move to whatever is commercially
24 viable.

25 CHAIRMAN WEISENMILLER: I think certainly on the

1 corn issues, we certainly welcome anything you want to
2 put in the record on that, you know, but there is sort of
3 a really high insensitivity, I assume you saw the *New*
4 *York Times* editorial or op ed piece a couple days ago --

5 MR. SCHULER: Yes.

6 CHAIRMAN WEISENMILLER: -- talking about corn and
7 the difficulties now in terms of pricing and Ethanol
8 production, so that's at least a theme that you need to
9 respond to on our record, frankly, because certainly that
10 resonates in the Capitol and throughout California,
11 throughout the world, on that perception that somehow our
12 Ethanol production is driving up food prices for the
13 poor.

14 MR. SCHULER: Right now, and actually for the
15 last few years, the Midwest farmers can make a buck
16 without having to go to the Federal Government for
17 handouts. Is that all bad? I -- *The Economist* --
18 several years ago had sort of a front page article, they
19 said the era of cheap food is over. If you look at the
20 Chinese as they go to a meat-based diet, it's less
21 efficient, it takes way more grain in order to provide
22 meat than it does to eat rice, as you look at these
23 developing countries and their demands for more food,
24 where we're going to supply that food at the globe is,
25 you know, Australia is too dry, Antarctica is a little

1 cold, you know, you get down to North America and South
2 America, Bill Hudson at *The ProExporter*, did a very
3 excellent piece on this, and it's our Midwest, we are
4 responding to those changes, yes, renewable fuels
5 competes with that to some extent, but is that
6 necessarily bad? I would say no, that what we ought to
7 be looking for is commercially viable alternatives that
8 work, and where we can compete. And anything that you
9 folks can do to support that, especially with production
10 facilities here in California, is very valuable. We are
11 more responsive to the Low Carbon Fuel Standard than
12 those Midwest producers who sued CARB.

13 CHAIRMAN WEISENMILLER: Certainly you're on a --
14 how many direct jobs do you have at your facility?

15 MR. SCHULER: We have 35 jobs.

16 CHAIRMAN WEISENMILLER: Okay --

17 MR. SCHULER: We're very cost conscious. All the
18 programs that we mentioned would bring additional jobs.
19 These are good jobs, we're not staffing somebody to pay a
20 minimum wage, they're very -- we are very proud of our
21 employees and have a huge investment in them and
22 compensate them well.

23 CHAIRMAN WEISENMILLER: And in terms of other
24 benefits in that area, what sort of property tax are you
25 paying?

1 MR. SCHULER: Property tax, originally that was
2 about a million bucks a year. We appealed and we got
3 them to reduce it a little bit. It's substantial and I
4 think we bring additional jobs, as well. As I mentioned,
5 just the trucking, 48 loads of Distillers Grain a day, 20
6 loads of Ethanol, a load of oil, and every time we do a
7 project, the construction bids and stuff.

8 CHAIRMAN WEISENMILLER: Yeah, and obviously these
9 questions, I'm hoping to see others speak, I think
10 fundamentally as we're talking about what we're looking
11 for in terms of a record is to the extent these projects
12 provide tangible benefits, economic benefits in terms of
13 jobs, property tax, sales tax, you know, the more you can
14 help us by quantifying that, the better.

15 MR. SCHULER: Okay.

16 CHAIRMAN WEISENMILLER: I mean, and that's not
17 just you, but certainly all the companies.

18 MR. SCHULER: Sure. And we have responded to the
19 data requests, the inquiry, and provided -- we're getting
20 in an area where there's a little bit of competitiveness
21 and confidentiality, but certainly we've been very
22 forthcoming with your staff, and I think it's probably
23 better for them to respond to that in summary fashion
24 than us in specific fashion.

25 CHAIRMAN WEISENMILLER: Okay, that's good.

1 Commissioner Peterman?

2 COMMISSIONER PETERMAN: Thank you for your
3 comments. I'll have some questions for all of the
4 panelists, and so I'll reserve the majority of them until
5 after everyone has presented. But just a couple follow-
6 up questions for you, Mr. Schuler.

7 First of all, by the way, I haven't heard the
8 term "contango" since business school, so that was a nice
9 flash from the past.

10 MR. SCHULER: We hear it all the time.

11 COMMISSIONER PETERMAN: Unfortunately, I guess
12 you do, right? So regarding the goal of one year out, 20
13 percent of your feedstock coming from this grain,
14 sorghum, what are some of the things that need to happen,
15 some of the assumptions embedded for that, to get to that
16 20 percent? Is there a surety of feedstock, for example,
17 at this point?

18 MR. SCHULER: I don't think the feedstock will be
19 much of a problem, we'll find out. That EPA
20 pronouncement which was -- it isn't even finalized, it
21 only came out at the end of May -- but we've been working
22 diligently since then because we're in an ideal spot, we
23 got a co-generation facility and we've got the digester
24 project, it's well along if we can get past our
25 neighbors. We think it's more about the farmers. We

1 like the program because we think psychologically --
2 those same dairy farmers hate us almost as much as some
3 of the food folks -- food vs. fuel folks you hear from.
4 But grain sorghum is not an ideal feedstock for dairy
5 and, in a way, we think we can convert it into a good
6 feedstock, so we won't be competing with them for corn.
7 But we still need to find growers. So what we're going
8 to do in our current program is go out and see what we
9 can do to incentivize growers, essentially contract for
10 acreage. So I don't know how successful we'll be. We've
11 teamed with Beatty High School in that endeavor.

12 COMMISSIONER PETERMAN: Thank you. And in your
13 comments, you asked for us to make sure to consider these
14 plants as renewable fuel plants and not only corn Ethanol
15 plants, and I think we are doing that in the sense that
16 we have provided some grants, as well, for some of the
17 other alternative renewable fuels. And on this issue,
18 you've touched upon that you get revenue sources from Wet
19 Distiller Grains, vegetable oil, the corn Ethanol, a
20 couple different products, and it seems like you have a
21 diverse product base. And the ultimate question that I
22 think we're dealing with is, as I've noted, as we're
23 trying to transition to second and third generation
24 biofuels, the AB 118 program is providing competitive
25 solicitations for those second and third generation

1 biofuels. You also are receiving revenue from some of
2 these other products, Wet Distiller Grain and corn
3 Ethanol. To what extent, then, can your plant survive
4 without having explicit additional subsidy fundamentally
5 for the corn Ethanol production? And I guess this gets
6 to the question for you generally in terms of your net
7 profit, what share of it is coming from the Wet Distiller
8 Grain vs. corn Ethanol? So if you can speak to that, I
9 can be more specific --

10 MR. SCHULER: Gordon had a couple very good
11 graphs and his first one showed what the current formula,
12 draw and reimbursement formula for CEPIP was, and as that
13 was being enacted, corn prices started to soar. As corn
14 prices soar, that third of the bushel of corn that I
15 referred to earlier that goes to Distillers Grain, that
16 value soared, too. Right now, it's especially high. We
17 have never recovered as much of our corn cost. Right
18 now, we recover 24 percent of our corn cost with
19 Distillers Grain because soybean meal -- it's not just
20 corn that's under stress because of the drought, soybeans
21 are, too. So soybean meal, which is 48 percent protein,
22 Dave Gilbert knows this stuff way better than I do, we're
23 about at 30 percent, maybe 32 percent, but that's over
24 six hundred bucks a ton right now. It's a dynamic
25 analysis, so right now I think any of the three of us

1 would tell you that we survive on our co-product value.
2 It's huge. And back when corn is at two -- I don't know
3 that it will ever be at \$2.55 a bushel again, but maybe
4 it might get down to less than \$4.00 a bushel again, then
5 that isn't as big of a component. So Gordon (Schremp)
6 does have a formula that includes the Distillers Grain
7 value, and we think that that's way more representative;
8 that's the way we run our plants.

9 COMMISSIONER PETERMAN: So if it's fair to say
10 that you survive on the co-product value, what price
11 would Ethanol have to fall down to, to not make it
12 worthwhile, making the Ethanol to have that co-product?

13 MR. SCHULER: It's a question I'm often asked,
14 but -- and my response, again, not to be disrespectful,
15 it's all about the margin. It has nothing to do with
16 absolute values. It's almost counterintuitive; when corn
17 price is very high, or Distillers Grain price is high, so
18 that the crush spread that Gordon referred to actually
19 can be negative, and we can break even under certain
20 circumstances, it's very dynamic, then -- but right now
21 none of us are making any money. We are going through a
22 period when the least efficient producer in our industry
23 will be forced to shut down and, until they shut down,
24 prices won't improve. Now, we all would have differing
25 opinions of that, I actually think margins might be

1 decent in August because it's the tail end of the current
2 harvest, and I know of several plants that don't have
3 their corn bought and they can't afford it, but they're
4 going to shut down for extended maintenance. But then,
5 in September, when the new harvest, I think until E15
6 hits, which may be a little while yet, then it's going to
7 be a struggle. We look to you to help us through that
8 rough patch just as the Midwest states are helping their
9 producers through that rough patch, but we like your
10 program because, unlike some of those state programs, at
11 least the ones I'm aware of, those are outright grants,
12 and we like the loan component of your program. We think
13 it's very appropriate.

14 COMMISSIONER PETERMAN: Thank you. Well, I'll
15 probably have some follow-up questions along this line of
16 thinking, but let's hear from the other panelists first.

17 MR. SCHULER: Thank you.

18 COMMISSIONER PETERMAN: Thank you.

19 MR. MCAFEE: Thank you. This is Eric McAfee with
20 Aemetis, the Chairman and CEO. Thank you, Chairman
21 Weisenmiller, Commissioner Peterman, for the opportunity
22 to talk today. I have only a few slides, but I want to
23 start out with some answers to questions you've already
24 asked.

25 Last year, we spent about \$17.7 million in

1 purchases from local vendors in the Modesto area, which I
2 think we all agree is an impacted area in California from
3 an employment point of view. We paid about \$500,000 of
4 property taxes. Most of the year in 2011 the plant was
5 idle, so we relied upon the CEPIP Program last year to
6 re-start the plant, and so our property tax is reflected
7 in idle Ethanol plant, primarily. We paid out \$4.2
8 million of salaries and wages in our first 12 months of
9 operation, so that's an annualized number, but it will
10 give you visibility in what we do. And about \$1.2
11 million of payroll taxes from the operation of the plant.

12 Indirectly, though, we pay almost \$5 million a
13 year in just trucking. And when you think about
14 trucking, it's a very labor intensive business, very
15 capital intensive business. So, indirectly, our business
16 spends about \$18 million per month of money that floats
17 through our books coming from California motorists, but
18 directly going into the pocketbooks of our vendors. The
19 large majority of that, of course, is corn purchases, but
20 corn has to get here, and it comes here by rail, so
21 there's railroad jobs and railroad capital expenditures,
22 and other things. We also have about 61 employees which
23 represent the fact that we have technology personnel and
24 other personnel that are not directly related to plant
25 operations that are in our business.

1 So on our first slide here, we are a technology
2 company based in Silicon Valley, we are about a quarter
3 of a mile from the Apple Computer headquarters in
4 Cupertino, and we got into the corn Ethanol business
5 because it is a platform for the adoption of our patented
6 technology. We have biofuels production facilities in
7 both North America, as well as Asia. Currently in North
8 America, we're running about \$200 million a year from
9 fuels and our related products.

10 I'd like to make the point that you can't
11 separate the co-products we sell from the corn Ethanol we
12 sell; that's like saying if you sold your car without
13 headlights, would you be profitable? And the answer is I
14 couldn't sell my car. We could not produce Ethanol
15 without getting rid of -- if you think of it that way --
16 the corn protein. And frankly, we couldn't buy any corn
17 unless we were able to sell corn protein to over 200
18 local customers. And so Dave Gilbert's organization at
19 Gilbert's grain business is a core part of our business;
20 without them, we would not operate, and our 200 customers
21 that buy animal protein are core to our business. Foster
22 Farms is core to our business. We sell them what amounts
23 to today almost \$6 million a year run rate of corn oil
24 that they use to feed their poultry. And so these are
25 all the headlights and the windshield wipers on our

1 business and they're all integral to us being successful.

2 Our business is, however, focused on bringing new
3 technology to the biofuels business. The name of our
4 company, Aemetis, means one prudent wisdom, and we
5 focused it on the wisdom of replacing petroleum products
6 with renewables fuels, that's our technology goal. And
7 we have four granted patents and 14 pending patents on
8 the microbes and enzymes and production processes
9 required specifically to upgrade corn ethanol plants. We
10 also have a research and development facility in Maryland
11 at the Maryland Biotech Center, funded by the Department
12 of Defense and the University of Maryland and the State
13 of Maryland. And in 2008, we built a renewable fuels
14 plant in Montana that, thank you to the CEC, we're in the
15 process of redeploying that facility and technology at
16 our plant in California. We are the recipient of a \$1.8
17 million CEC grant; we're one of the three Cellulosic
18 Ethanol grants that CEC has provided.

19 Unusual for most companies that would be seeking
20 support for a new technology, we have existing global
21 research and development operations and marketing
22 capacity both in the U.S., as well as in Asia, and we
23 ship into Europe many of the products we produce in Asia,
24 and so we are an operating business and, in the U.S.,
25 that's entirely based upon the fact that we saw the corn

1 Ethanol facilities and infrastructure as a base of
2 operations upon which we could deploy technology.
3 Whoever is running the slide, I think it's Gordon, you
4 can go to the next slide.

5 This is the picture of what capital investment
6 looks like. This is \$130 million of capital that was
7 invested to build this facility, and whether it uses
8 starch from corn, or starch from another source, or sugar
9 from sorghum, is almost irrelevant to the capital
10 expenditure that you're looking at. And as Lyle Schuler
11 mentioned, this is an excellent footprint for how we can
12 use the commodity markets to provide a multi-feedstock
13 supply chain to feed this facility, but the facility is
14 already there. And we are pleased to state that last
15 month we acquired this facility, original production cost
16 was \$130 million, and we now own 100 percent of the
17 facility and the shareholders are now owners of stock in
18 our company.

19 The next slide is a brief list of the investments
20 we've made in next gen fuels, I won't go through each one
21 of them in much detail, but I'll give you a couple of
22 highlights. Again, this is the reason for our business
23 being founded and we've deployed over \$80 million in the
24 course of the last six years in focusing on these
25 efforts.

1 In 2011, we acquired a technology company called
2 Zymetis in Maryland, which had scaled up a 7,000-liter
3 production unit at a U.S. Army facility, and has
4 demonstrated over a 50 percent increase in cellulosic
5 Ethanol yield over traditional current technology. This
6 is a microbe that had been consuming marsh grass in the
7 Chesapeake Bay and was taken by the University of
8 Maryland to commercialization funded by research and
9 development from the Department of Energy. It's now a
10 wholly-owned subsidiary of the company, its employees,
11 its PhD's, its laboratory equipment, all of that
12 operational and funded by our company since our
13 acquisition.

14 We also, as I mentioned, retrofitted and acquired
15 the Keyes Ethanol Plant. This is a zero-water discharge
16 facility, but it has a very interesting feature, it has
17 an 80,000 gallon fermenter that was originally used for
18 yeast propagation, in order to save time on fermentation,
19 there's an 80,000 gallon tank that yeast is grown up in
20 for about six hours. We amended the process so that we
21 are able to propagate yeast in the fermentation tank,
22 which leaves an 80,000 gallon research and development
23 tank fully clean in place capable, heat managed,
24 integrated with the rest of our systems, sitting in the
25 middle of an operating facility, and that has offered us

1 an asset that we're using with some of our technology
2 partners, which we'll talk about, that is unique. It
3 would have cost us somewhere between \$3 million and \$5
4 million of direct cost, but quite frankly would have had
5 to spend \$100 million of indirect costs for the utilities
6 to be in place to operate this facility, and it's sitting
7 there and being used by us for testing advanced
8 feedstocks.

9 We do deliver about \$40 million a year of the
10 protein from corn because we cannot figure out a way to
11 take protein and turn it into sugar. I think it's
12 technically impossible, by the way. So what we do is we
13 take the corn kernel, we extract a waste product which is
14 the starch in corn, which isn't as valuable to the animal
15 feed customers we sell to, and then we subsidize the
16 price of the protein, we sell it cheaper than the corn
17 that Harris Ranch and other customers would buy it at;
18 otherwise, we wouldn't have any customers at all on the
19 animal feed side. So the way we're able to subsidize the
20 animal feed and produce animal products in California
21 cheaper than anybody else is by the subsidy we provide
22 from the fuel we produce.

23 So about 30 years ago when Jimmy Carter initially
24 adopted the incentive for Ethanol, he failed to educate
25 the market that we are an animal feed industry that has a

1 waste product management process that enables us to
2 subsidize animal feed -- that's what we are, we're a
3 waste process facility, we process the waste starch that
4 is in the corn kernel, and subsidize the remaining
5 protein.

6 We, in 2012 on our own budget -- it took about a
7 year and a half to do this -- we designed, built and now
8 operate a corn oil extraction unit at Keyes. This corn
9 oil is used as an animal feed additive and also as a
10 biodiesel component. And I think Lyle stated a worthy
11 goal, which is the lowering of the carbon intensity of
12 California produced Ethanol below the Brazilian
13 threshold. Because currently in the United States we
14 subsidize to the tune of about \$.80 a gallon the
15 importation of Brazilian Ethanol under the argument that
16 they have less carbon. And since California producers
17 are already the lowest carbon producers in the U.S., if
18 we continue to make these investments in lowering our
19 carbon, we think that preserving those jobs in the United
20 States is a worthwhile goal of our policy decisions. And
21 this passing in the night process in which we ship
22 Ethanol to Brazil because it's cheaper -- corn sugar is
23 cheaper than Brazilian sugarcane -- and they ship us,
24 literally passing somewhere off of Panama -- a shipment
25 of Ethanol because the U.S. consumer is subsidizing them

1 to the tune of \$.80 a gallon, is not the intended policy
2 goal, but is exactly why you have any green bars at all
3 on the right of Gordon's chart where you show Ethanol
4 exports; there should be no green bars at all, unless you
5 had tax policy, which we do, but we're shipping our \$.80
6 a gallon to them. Eighty cents, by the way, is a lot.
7 At 60 million gallons a year, \$.80 is almost \$50 million
8 of cash that we ship to a producer in Brazil. While
9 we're struggling over a \$3 million per year CEPIP, we're
10 shipping \$50 million to my competitor in Brazil, solely
11 based upon the CEPIPs.

12 Lastly is we are in the process of developing the
13 cellulosic Ethanol unit at Keyes based upon our Montana
14 facility, supporting the CEC grant we've received. Next
15 slide.

16 A very very important part of our discussion,
17 though, is not the refining technology, the patents we've
18 talked about that upgrade refining, but the impact that
19 those technologies have on the kind of feedstocks we can
20 use. And we've used our corporate capital to focus on a
21 feedstock we think is extremely promising. And in terms
22 of history, starch and sugar are both foods, it just
23 happens to be the Brazilian sugar is perceived as being
24 available on a 100 million acres of range lands, so it's
25 not counted the same way in the carbon calculation as

1 sugar that comes from corn starch. But thinking about it
2 from an oil industry perspective, which happens to be my
3 background, what you really care about is how many
4 gallons of fuel do you get per acre, because
5 fundamentally we're talking about a real estate
6 allocation here. There's 95 million acres of real estate
7 allocated corn production; 40 percent of that passes
8 through an Ethanol plant as we feed animals. So from a
9 real estate allocation point of view, you have about 36
10 million acres. But corn produces about 500 gallons of
11 Ethanol per acre -- 500 gallons. If you were Exxon, you
12 would care a lot about whether you could get your oil
13 field from 500 gallons to maybe a thousand gallons an
14 acre. We went on a worldwide search over the course of
15 half a decade and we came up with a product that the USDA
16 believes is the highest yield in Ethanol per acre, even
17 in excess of Brazilian sugarcane. It happens to be a
18 Peruvian product that the Chinese used a lot during the
19 Mao Tse Tung revolution because they sent the
20 intellectuals out to the farms and they were starving,
21 and they wanted the fastest growing, highest yielding
22 biological transformation of solar energy to starch that
23 was possible, and they developed a product called CX1.
24 Over 15 years, the USDA commercialized it and we are the
25 first company in the Western United States to actually

1 take it into commercial production. Last year, we
2 planted a field in Fresno County and we produced more
3 than 1,900 gallons per acre of Ethanol if you take the
4 starch, convert to sugar, multiply it out, you end up
5 with 1,900 gallons an acre of Ethanol. This is between
6 10 and 20 percent more than you would get if you would
7 have grown sugarcane in Fresno. And it's almost four
8 times the production of Ethanol from corn. So from a
9 land use point of view, you could take today's roughly
10 \$15 billion Ethanol industry and make it a 60 billion
11 gallon industry without one additional acre of production
12 being allocated to biofuels, using this math. Obviously,
13 it's transformative for the industry. It's also
14 transformative because it reduces the cost of biofuel at
15 the pump. If you can get four times the amount of fuel
16 out of a given acre, then your costs are much lower.
17 This uses about half of the water of a regular corn
18 field, and about a third of the fertilizer, so your input
19 costs are lower, your revenues are four times as high,
20 and so you have a lower cost biofuel at the pump.

21 And then lastly, but also very important, a goal
22 by the USDA was to grow this crop on unusable land, so
23 they went to an old potash mine that they couldn't grow
24 anything on and grew very successful crops. They went to
25 high salinity land, they went to desertous justification

1 recovery projects and found that this was a very
2 effective solar panel that didn't rely a lot on soil
3 quality. So in the Western San Joaquin Valley, we have
4 over a quarter million acres of land we can't use because
5 we could offer federal water, and we have high salinity
6 land, and this would be very appropriate to that. So we
7 tested the CX1 feedstock in 2011 and 2012 for Ethanol
8 production and we're in our second year of planting. We
9 will actually be producing our second crop in about 60
10 days. Next slide, please.

11 This is a picture just to give you a sense of
12 perspective here. On the left, you'll see a green leafy
13 vine that isn't even as tall as the lady's knees, that's
14 a departure from the miscanthus kind of approach, which
15 is 14-feet tall. The reason why is because the ideal
16 process we're looking for here is a biological solar
17 panel, and we don't want the plant to spend any of its
18 time building structural materials, building stilts to
19 stand up on, we want it to spend all of its time shoving
20 the sugar that it creates down into the ground and
21 putting it in big sacks. And so what you see here is
22 basketball sized sacks of an industrial starch that's
23 non-edible. And so we believe that that's really a key
24 future, a goal for our company is to replace corn with a
25 California produced crop, on roughly 30,000 acres that

1 could replace all of the corn we currently require. Last
2 slide.

3 We are seeking continued partnership with the
4 CEC. We are very pleased to be already in the cellulosic
5 ethanol grant relationship. We have a market in
6 California of 1.3 billion gallons that is in place, it's
7 an existing market whether we want it to be there or not,
8 it is. And we have invested to acquire and upgrade the
9 Keyes plant to help satisfy that market, but we are about
10 to face what slowly will be a glacial increase in the
11 Ethanol market of 50 percent, and we will end up short
12 Ethanol. Ethanol is an octane booster, so that oil
13 companies can use lower grade oil sands feedstock and use
14 82 to 84 octane gasoline, but still at the pump provide
15 us with 91 octane. And the reason they are able to do
16 that is because of Ethanol. It's an oxygenate that
17 enables that fuel to burn cleaner. So we will end up
18 with a roughly 20 billion gallon market up from today's
19 14 or so because of E15. And California will go from a
20 1.3 billion gallon market to roughly a 2 billion gallon
21 market, but largely will be importing that product and
22 largely will be importing it from corn Ethanol producers
23 in the Midwest. So the CEC partnership we seek is to
24 wean ourselves off of this Midwestern corn dependency and
25 increase investment into California low carbon facilities

1 so that we're producing this Ethanol in California,
2 rather than going in the opposite direction, which is
3 shutting down California production, becoming more import
4 dependent on the Midwestern states.

5 The second bullet point, the upgrades we
6 currently have in process are a couple million gallons of
7 multi-feedstock demonstration and fiber from corn, and
8 then a multi-feedstock production unit. So we are moving
9 forward on cellulosic Ethanol. I believe we're certainly
10 one of the leaders in California in that.

11 And then the medium term hope -- Chairman
12 Weisenmiller, you were seeking some guidance on this --
13 within 48 months, we could be entirely weaned off of the
14 Midwestern feedstock and weaned off of corn if we
15 continue to make just moderate investments and scaled up
16 CX1 as a feedstock in the Central Valley. We would no
17 longer import feedstock from the Midwest. I was just in
18 Canada about a month ago and was with a grain company
19 that scaled up a canola product to a million acres over
20 the course of about five years, and had extensive
21 discussions around the resource constraints to get us
22 from zero to 30,000 acres, and I think it's a very very
23 achievable goal; we're not going to have to do the
24 million acres the Canadians did in order to have an
25 impact, and our plant could potentially be an entirely

1 low cost provider of Ethanol from a non-food feedstock
2 grown in California. And I believe that is the last
3 slide.

4 CHAIRMAN WEISENMILLER: Yeah, in the interest of
5 time, just sort of following up on that one point, so at
6 this point, what percentage of your feedstock is corn?

7 MR. MCAFEE: A hundred percent today, except for
8 our research and development.

9 CHAIRMAN WEISENMILLER: Okay, and what would you
10 anticipate, say, a year from now?

11 MR. MCAFEE: A year from now, I anticipate it's
12 going to be 99 percent because we currently don't have
13 anything other than internal capital to fund our scale-
14 up; if we were to fund our scale-up, we'd probably be
15 five percent weaned off next year, 20 percent the year
16 after that, 60 percent the year after that, and 100
17 percent the year after that. The scale-up is pretty
18 rapid.

19 COMMISSIONER PETERMAN: Thank you. I'm going to
20 save my questions just until after Mr. Koehler speaks
21 because I'll have them for all of you. And also just a
22 check-in, as workshops go the timing sometimes doesn't
23 get right, but we want to get the right information and
24 we're always quite ambitious, so, Mr. Olson, I'm going to
25 look to you and suggest the following and you can talk to

1 the panelists about what their availability and we'll
2 make it work, but would it be possible to move the second
3 panel to right after lunch? I know we have two speakers
4 from Hart Energy and Air Resources Board, and we want to
5 be aware of their time, so if needed we can deal with
6 them earlier, but I think this panel will go all the way
7 until lunch.

8 MR. OLSON: It's possible. We think that the Air
9 Resources Board discussion is not a Powerpoint, it may be
10 very short.

11 COMMISSIONER PETERMAN: Pardon?

12 MR. OLSON: The Air Resources Board presentation
13 should be very short.

14 COMMISSIONER PETERMAN: So can that happen after
15 lunch?

16 MR. OLSON: Could be.

17 COMMISSIONER PETERMAN: Okay, if you just confirm
18 with the speakers and if you're not available, speakers,
19 please let us know, but I think we have a lot of
20 questions for this panel and I want to make sure we are
21 able to proceed accordingly, as well as get the public
22 comment. Mr. Koehler, please.

23 MR. KOEHLER: Thank you, Chairman Weisenmiller,
24 Commissioner Peterman, I appreciate the opportunity to
25 present. A lot of ground has been covered by our two

1 speakers and, in the interest of time, I'll try to
2 summarize some remarks and maybe respond to some of the
3 information that was presented earlier.

4 You know, we're all doing what we think is the
5 right thing and we're all doing the same thing, and it's
6 largely due to the partnership we have with you, the
7 Energy Commission, and what we believe is a very well
8 integrated policy between the Low Carbon Fuel Standard,
9 petroleum reduction goals, and the CEPIP Program, to get
10 us to really focus on producing the lowest carbon fuel,
11 providing jobs and doing it with a diverse set of
12 feedstocks and technologies. And sort of indicative of
13 that commercial effort, we're part of a coalition, we're
14 all here, part of the California Advance Energy
15 Coalition, which includes existing producers, as well as
16 a number of environmentalists and energy advance biofuel
17 technology companies, some of whom you'll be hearing from
18 this afternoon. So, you know, the effort is real, it's
19 commercial, it's also we've organized a coalition to help
20 you in your job to make sure that we're advocating for
21 these issues.

22 Chairman Weisenmiller mentioned to you about the
23 viable path and it's been essentially alluded to here
24 today, and you've seen what companies are doing, you know
25 -- I forgot for the record, Neil Koehler, CEO of Pacific

1 Ethanol. We have two facilities in California, one in
2 Stockton, which is running, which has the incentive to do
3 so with the first round of CEPIP funding. We have a
4 facility in Madera, California, a 40 million gallon
5 facility that's not running, and with another round of
6 CEPIP Program funding, we're confident that we could
7 bring that facility up, again, deliver the lowest carbon
8 Ethanol fuel to the State of California, and provide
9 significant employment, tax base, etc., which currently
10 the state is missing out on.

11 You know, I think we all feel that the existing
12 industry is not only a viable pathway, but is really the
13 only viable pathway in the immediate term to be able to
14 do what we're doing today, which is already the lowest
15 carbon Ethanol, and transition to even lower carbon
16 Ethanol with these new technologies. So very important
17 from that aspect and, too, you protect the jobs, we've
18 heard about the 35 to 45 direct jobs, it's about 500 when
19 you consider the indirect jobs, a report out today
20 showing that California has the second highest
21 unemployment in the country. So, obviously the jobs are
22 critical, we're providing them now and, with some
23 continued cooperation from the State, can provide many
24 more in the future.

25 This notion of corn, you know, not all Ethanol

1 production is created equal, corn Ethanol, we are all
2 biorefineries that are using corn today because of what
3 Lyle mentioned, it is the most viable feedstock, but we
4 are all working to transition. Not all Ethanol plants
5 are created, and not all corn plants are created equal.
6 We actually are seeing a lot of corn grown in California
7 in response to the market. We irrigated here, it makes
8 it a little more expensive, but given the higher
9 commodity price and just that, you know, California has
10 the luxury of a very vibrant agricultural economy, to
11 choose what it wants to grow and when it grows it, well,
12 today the incentive is to grow corn. And so, we're
13 seeing if you drive around, I'm sure you're noticing it,
14 as well, a significant amount of corn being grown in
15 California that is irrigated, so we're going to see very
16 good yields, not an impact from the drought we'll see in
17 the Midwest, and that's very good for California farmers,
18 that's very good for the California economy given the
19 value of agriculture to the state.

20 So there are ways, you know, we all are making
21 that move to the next generations of technology, we like
22 to think about it as, okay, so the conventional corn
23 Ethanol was 1.0, we already are at, you know, something
24 -- call it 1.25, given that we're 25 percent or better
25 from an efficiency and a carbon scoring than guys in the

1 Midwest, and then we get to 1.5 with the use of milo, you
2 know, corn oil. We in our company have partnerships with
3 four or five companies -- Mascoma, Embicon, EdeniQ,
4 Aemetis, ZiaChem, just to mention a few, that are helping
5 us both with how we further improve our existing
6 technology and then use these facilities and
7 infrastructure to transition to the next, so it's very
8 important. So we think about it as, you know, 1.0 to
9 1.25 to 1.5 to 2.0 to 2.5, I mean, it's going to be this
10 incremental process and that's a very important point,
11 that there is ways to work with a corn crop, to get more
12 corn grown in California, to substitute milo. We brought
13 in, actually, a full trainload, 100 cars of milo from the
14 Midwest, so already that represents a meaningful portion
15 of the Ethanol that we're producing from something other
16 than corn, we're currently investigating, you know, the
17 market is so turned upside down here in the United States
18 with the price, where the U.S. is typically a large
19 exporter of grain, the world markets. We are actually
20 today working on bringing in a vessel of milo from
21 Argentina. That would represent something close to over
22 five percent of our annual requirements, just bringing in
23 one 30,000 ton vessel. So these are the opportunities
24 that we have in California, we're on board, we have a
25 vibrant local agricultural industry that can support us

1 and the more we can do to gather both public/private,
2 reaching out to our friends in the agricultural industry,
3 working with Dave Gilbert and his company on the feed
4 side, you know, very important to reiterate that point
5 that we are as an industry the largest feed manufactures
6 in the State of California, the Ethanol industry here in
7 the state, you know, that's very important.

8 CEPIP is an incredibly important part of this
9 integrated public policy. It provides the flexibility to
10 continue to invest in these incremental and next
11 generations of technologies. I think from an AB 118
12 perspective, it is an absolute model program, there
13 really is no other like it in terms of the accountability
14 and results, delivering lowest carbon fuel jobs along
15 with the reimbursement provisions, so an incredibly
16 progressive program that has already resulted in
17 delivering the best carbon credit in the market to
18 California.

19 We talked about the jobs and it's the transition,
20 and we worked with the Legislature on supporting Assy.
21 Valadeo in this last round, SB 523, when it was a bill in
22 the first year, first year of the two-year legislative
23 cycle, you know, just to eliminate the program. We were
24 able to get together with our colleagues in the other
25 industries, feed and others, as well as the environmental

1 community and the Legislature, and to come up with a
2 compromise that said, you know, what our need is, it's
3 now, it's the transition, we understand that after 2013,
4 you know, we should have made enough progress and
5 provided enough support to get us to that next level
6 where we can move without the CEPIP Program. And so it's
7 really the urgency, the need is now, we heard about the
8 market issues that we're all experiencing, the negative
9 margins that the whole industry is experiencing, the
10 Midwest industry that absolutely has received significant
11 support, that has allowed them to at least continue to
12 receive payments or receive payments in the past, that
13 have paid off their capital investments. We're all still
14 working to do that and we really need your support to
15 continue to be very competitive and then, also, in this
16 very progressive manner that the program entails to move
17 to the next generation.

18 On the whole current condition around drought,
19 and we can get into more conversation about this, I
20 think, Chairman, you brought up the whole climate change
21 issue, I totally agree with you, it further underlines
22 the need to make sure that we are working on climate
23 change policies, and that's exactly what the whole AB
24 118, AB 32, the CEPIP Program, is to diversify those
25 technologies, take what is already giving us

1 incrementally better carbon footprint here in California,
2 and make it that much better. And so, in our view, it
3 just underlines the need, the immediate need and value to
4 continue on these very important programs. Just a couple
5 of points on the drought, you know, the Ethanol industry
6 -- and this is responding to one of Gordon's points --
7 while 40 percent of the corn crop is in fact coming
8 through the biorefineries in the United States, the 210,
9 a significant portion of that is going back out as feed,
10 so if you really look at the incremental corn that
11 actually gets turned into Ethanol, it's closer to 25-26
12 percent, and I think that's an important fact for the
13 record and that seems to get missed in a lot of the
14 public media. It's also important to note that the --
15 and it was mentioned about how we now have farmers that
16 can make money producing corn, which is why farmers
17 California have options to do other things, are saying,
18 "Okay, we can do that, too." That's good. But the
19 industry has absolutely increased the demand and the
20 productivity, it's not a zero sum gain. We planted 95
21 million acres of corn and thank God we did. If we didn't
22 have an Ethanol machine where we were planting 60, 70, 75
23 million acres, you could argue -- and there are
24 economists that are doing this -- they're saying that the
25 price of corn certainly would not be lower and could even

1 be higher if not for the Ethanol industry today. So it's
2 really -- it's not as simple as saying, "Well, corn is
3 this new demand," well, it wasn't a fixed amount of corn,
4 we have allowed farmers to be that much more productive
5 and to produce that much more corn. And on the demand
6 side, we've diversified the demand's uses for corn, which
7 is actually created, you know, diversity creates
8 flexibility, creates resiliency, and if you look at
9 what's happened since the price of corn has gone up and,
10 again, contrary to a lot of the critiques out there that
11 say, oh, the Ethanol mandate, you'll bid up the price of
12 corn and keep taking it, because the Renewable Fuel
13 Standard has a tremendous amount of flexibility built
14 into it, and Ethanol plants have the flexibility to move
15 production up and down, the Ethanol industry production
16 is off 20 percent from its peak earlier this year and
17 there is no other end user of corn today that has reduced
18 their consumption that much, so actually the Ethanol
19 industry has been the first to be very responsive in
20 saying, "Okay, the price of corn is high, we should back
21 off," and that's what we've done. Feed is starting to
22 respond, exports are coming off, the market will do what
23 markets do which is find the right balance and we will
24 continue to be able to provide this Ethanol product here
25 in California from locally grown corn. You know, our

1 objective is, like Calgren's, is to have milo be a
2 significant percentage, as well as overall locally
3 produced corn and milo, and we think that is presenting
4 huge economic opportunity for the State of California
5 while we then make the additional investments to move the
6 other feedstocks and other technologies.

7 The other couple of comments based on some of
8 Gordon's slides, the talk about E85 in terms of its
9 Ethanol value, I think this is where E15 becomes
10 critical. Eric mentioned the octane value of the
11 Ethanol, so E15 is a much higher value use for Ethanol
12 than E85, plus it's something the refiners can get their
13 arms around, plus it helps provide the low carbon fuel
14 and renewable benefits we need here in the state.

15 So today Ethanol is trading still at a discount
16 to gas, if you look at the energy density and the fact
17 that E85 vehicles don't optimize for the better
18 performance of the Ethanol, there is a cost disadvantage
19 to the E85. In the E15, Ethanol actually has a value as
20 an octane enhancer and, given the way that the gasoline
21 is formulated, its value is probably 50 to 60 cents a
22 gallon higher than the price of gasoline, and we're still
23 selling it at a discount. So it's an incredibly valuable
24 transportation fuel when you look beyond just its
25 renewable and economic benefits, it's a very very high

1 source and valuable source of octane.

2 On the vehicle warranties, it's a little harder
3 to move the bureaucracies of the car companies, but they
4 are coming around, to clarify that. GM and Ford and a
5 number of their new 2012 and 2013 vehicles are now
6 warranting up to E15 and our understanding is that they
7 will be providing those warranties for all their new
8 vehicles. It's 67 percent, as Gordon correctly pointed
9 out, of the vehicle miles traveled, it's 80 percent, so
10 while it's going to be slower than we would all like, we
11 do believe the E15, given both the Renewable Fuel
12 Standards and the economic benefits of using Ethanol in
13 the gasoline for refiners, that we will see E15 be
14 implemented in a meaningful way starting next year and in
15 2014 we think it will become very significant.

16 Another point in terms of low carbon premiums
17 increasing, E15 will be implemented, but between now and
18 then is when we most need the support to continue to be
19 viable businesses, meeting the goals of the state from an
20 energy and environmental standpoint. Thank you.

21 COMMISSIONER PETERMAN: Thank you. Chair, do you
22 have any questions before we --

23 CHAIRMAN WEISENMILLER: Yeah, just briefly again,
24 how much are you using -- what percentage of your current
25 fuel mix is corn?

1 MR. KOEHLER: It's virtually 100 percent, but if
2 you look at the one train that we brought in, and we
3 bring in about four a month, so it would be 48, and so
4 one out of 48, so about five percent is the non-corn
5 today, and again, if we were able to secure a vessel,
6 that would be further reduced --

7 CHAIRMAN WEISENMILLER: And in terms of what you
8 would anticipate, say, a year out or five years out?

9 MR. KOEHLER: You know, our goal is to focus on
10 the near term is the locally produced corn and milo, and
11 we would hope that that would be 25 to 40 percent over
12 the next one to two years. We have programs in place
13 that we're looking for some support on to put in a five
14 million gallon cellulose increment into our existing
15 facilities, so five out of 16 would be, you know, in the
16 range of 10 percent additional, so our goal certainly
17 would be to move in the direction of the majority of our
18 feedstock being both locally grown and new feedstocks
19 over the next three to four year period.

20 COMMISSIONER PETERMAN: Thank you. Mr. Gilbert,
21 your time has come. The other panelists have touched
22 upon the value of the co-products for animal feedstock,
23 and so if you could speak to that and keep your comments
24 relatively brief, I would appreciate it, considering our
25 time restraints, but we're glad you're here to join us.

1 MR. GILBERT: Brief won't be a problem. My name
2 is David Gilbert, I'm President and CEO of A L Gilbert
3 Company. We're a dairy feed manufacturer operating in
4 Northern California. We service the dairy market between
5 Madera and Orland. We've been in business since 1892.
6 We've been involved in the dairy business since the late
7 '40s, the early '50s, and watched the growth of it to be
8 the largest Ag industry in California and the largest
9 dairy state in the U.S.

10 Briefly, you know, how we got involved with the
11 Ethanol plants is we were approached by the original
12 people behind the Keyes plant; they wanted to buy some
13 property from us and put a plant next to our facility,
14 there were some synergies that worked for the two of us
15 in doing that. I went back and went to the USDA outlook
16 forum in '07 to '08 to see where the USDA was coming on
17 Ethanol. When I walked away from there, I saw that they
18 were 110 percent committed to the Ethanol industry in the
19 United States. They stated at the time they had two
20 goals, one was to raise the corn price, which I think a
21 lot of people don't realize, that was one of the goals
22 was to raise the corn prices. At that time, we had \$2.50
23 corn across the United States and farmers couldn't make
24 money doing that; and the second was to decrease our
25 dependency on oil from countries that we don't get along

1 with, and I think people miss that sometimes.

2 Today we market for two out of the three plants
3 that are operated in California. We also lowered the
4 corn through a facility that we built for our benefit and
5 for the Ethanol plant next to us. We have 250 dairies
6 that feed this product in California today. It is a high
7 protein, a high quality, and a very palatable product.
8 You know, one of the analogies I'll use when talking to
9 people about this, it's like buying bread in a store
10 that's been around for a few months, or buying fresh
11 bread that your wife has made today -- it tastes better,
12 the cows like it, I mean, it is a succulent feed and most
13 everyone we've put on the product, they like the product
14 and they stay on the product.

15 One of the things I think, and it's been touched
16 on here, and I think it's really important, is the states
17 evolved over time -- when I first came up 30 years ago
18 into our business, there was a tremendous amount of feed
19 that was produced within the state. I'll give you an
20 example of a couple things, one was we had sugar beet
21 plants, we had one in Ham City -- Hamilton City -- one in
22 Woodland, one in Tracy, one in Manteca, one in Mendota,
23 one in Monrovia. Those plants don't run today. And
24 those were all feedstuffs that were fed here within the
25 state, and that was an energy and fibrous source to our

1 local markets.

2 Another example is we had cottonseed oil plants,
3 one in Kingsburn and one in Fresno, one owned by
4 producers and one owned by ranchers. Those don't exist
5 anymore, producing high protein product. So what I
6 really like about the Ethanol plants being here is
7 reducing feed here within the state because, if we didn't
8 have these plants running in the state today, I'd still
9 be selling dairy feed, but that feed I would be selling
10 would be coming from out of state, it would be coming
11 from the Midwest, we would be bringing dry Distillers
12 Grains in, we'd be bringing corn gluten feed pellets in,
13 we'd be bringing more corn in. I mean, the feed is going
14 to get fed, but it's not going to be feed that's produced
15 here in the state, we don't have it to source it. And
16 as Neil revealed today, it was just less and less plants
17 that are doing this sort of thing in California.

18 You know, for us to have a viable Ag industry in
19 the state, I mean, the most important thing is our
20 producers have a margin just like these guys need a
21 margin, but we also have to have products that are
22 produced here and that's important. I mean, we can't be
23 just becoming more and more of a net importer of
24 feedstuffs, and we're going to have a viable, you know,
25 animal industry within the state, in my opinion. And

1 with that, I'll stop. Thank you.

2 COMMISSIONER PETERMAN: Thank you. A few
3 questions. First, just a general comment. It's clear
4 from the presentations, both by the panelists and by
5 staff earlier that the corn Ethanol -- excuse me -- the
6 renewable fuel plants -- we'll just call them "these
7 plants," right -- these plants produce a diversity of
8 products that are beneficial to the state and the
9 question and challenge before us here today is to what
10 extent this more narrowly defined alternative
11 transportation fund should be used to continue supporting
12 the plants overall. And so my questions will be targeted
13 in that area, but it's not to dismiss the value, for
14 example, that these plants have for feed, for example,
15 it's just acknowledging that we have a more narrow
16 mandate here as an agency, but I'm glad we're having
17 these issues come to light in this discussion because
18 it's important for the state overall to see the nexus and
19 the interconnection between all these programs and all
20 these issues.

21 So, Mr. Koehler, you brought up 523, so let me
22 start there. You've noted support of the industry for
23 523, and 523 says that, as of July 1st, 2013, and this is
24 still going on in the Legislature right now, so this is
25 not a past piece of legislation, so everyone is aware,

1 that the state no longer would fund corn Ethanol after
2 July 1, 2013. Right? So that's how the bill is written.
3 So I have some general questions about what that means
4 about your expectations around timing, around then how
5 the businesses will be viable after that because were'
6 talking about, now, less than a year at which point if
7 this legislation is passed the state would not be funding
8 corn Ethanol. So what will you expect to do after that?
9 And how would these plants survive?

10 MR. KOEHLER: Well, first of all, when we -- and
11 we didn't actually officially support the bill, but
12 didn't oppose it and, you know, worked in collaboration
13 with the other interested parties -- it was our view that
14 there would be funding for 2012 and 2013 in the
15 investment cycle; so, at minimum and, you know, we could
16 make an argument that retroactively there were some
17 additional years that could be covered where there's been
18 a lapse in payments, but our objective is to -- and we
19 think it would be sufficient to have two years of full
20 funding under CEPIP for these facilities. After 2013,
21 you know, we've talked about E15, we've talked about the
22 Low Carbon Fuel Standard, and we've talked about the
23 general dynamics as the Renewable Fuel Standard continues
24 to increase the demand for renewable fuels. It is our
25 firm belief that certainly by 2014, if not the last half

1 of 2013, we will have a better supply and demand in the
2 market because we are seeing a shake-out in the industry
3 right now, further consolidation and rationalization of
4 production, while the demand continues to grow, and
5 specifically in California. You know, Lyle referred to
6 the fairly low value for the LCFS credits, you know,
7 given the very steep slope that the refiners need to
8 climb on that program, you know, we feel that -- and
9 fairly low compliance early on, which has resulted in the
10 low premiums -- that where we see a penny or two today,
11 that by the time we get into the 2013, again, the end,
12 and 2014, definitely, that that premium will increase
13 very significantly. Is it ten cents? Is it 15 cents?
14 You know, what is it? I don't know. But if you look at
15 the projected need for that low carbon and our ability to
16 provide it, you know, through these improvements that
17 we're making, have made to date, and will continue to
18 make in the future, that that will be a real value -- E15
19 will help nationally by helping on the overall supply and
20 demand. You know, with your assistance we will be making
21 the improvements that will improve our efficiency on our
22 current technology as we move to the next technology, so
23 would we have liked the full funding that we signed up
24 for in our agreements? Yes. Did we feel that this was a
25 reasonable compromise and given our views of the market?

1 Can we work with this? Yes.

2 COMMISSIONER PETERMAN: So just so I'm clear, the
3 assumption or expectation would be that, if this bill was
4 passed, and in terms of your thinking about it, that
5 2013-2014 these plants would be viable because of an E15
6 market and LCFS credits? Is that -- as well as just the
7 commercial need for -- continued commercial need for corn
8 Ethanol?

9 MR. KOEHLER: Correct, for Ethanol, for renewable
10 fuels which, you know, is the Renewable Fuel Standard and
11 LCFS and the unique way that we're making those renewable
12 fuels here in California, that there will be a premium
13 built into the market for that product, and that
14 certainly 2014 -- you know, back half of 2013, still a
15 little concerning, but, again, this was the compromise
16 that we agreed to, to make sure that we could get all
17 stakeholders on the same page to say, you know, "Let's
18 work with this." Again, for us, that assumption was if
19 there would be, at a minimum, two rounds, two years of
20 CEPIP funding under the way we have done our own
21 forecasts and analysis.

22 COMMISSIONER PETERMAN: So let me -- oh, if
23 anyone else has a comment on that, feel free to offer up
24 on 523, but I'll ask my second question, they're kind of
25 related. So then, is your request to have CEPIP as it is

1 currently structured funded? And if so, what is the
2 dollar amount of funding that the plants are requesting?

3 MR. KOEHLER: We signed contracts that were for
4 \$3 million, up to \$3 million. That was then reduced to
5 \$2 million, but the original program was up to \$3 million
6 per year. So certainly -- and the fact that we've missed
7 some cycles here, it seems appropriate that that would be
8 the level -- I'm going to speak for myself, I'll let Lyle
9 and Eric have their own opinions, we don't have
10 necessarily choreographed what a request is because, with
11 respect to the process, you know, we're trying to work
12 with you and be responsive to the needs, but we do think
13 that it's a credible need and a reasonable expectation to
14 continue to meet the needs of these companies in this
15 state to provide these benefits. So that would be our
16 request from the standpoint of Pacific Ethanol. We did
17 receive the \$2 million per plant and, you know, we do
18 think that the \$3 million per plant, particularly if
19 we're up to -- again, with all of the provisos in the
20 program on how it pays out, and doesn't pay out, and pays
21 back, but in those very dire circumstances that it could
22 be up to that. We did work with staff and there was this
23 reference to a revised commodity margin, which, you know,
24 very clearly, if you backcast that to some of the months
25 where payments were received, it would have reduced

1 payments for some of those months. So we're also trying
2 to be responsive that, yes, we want up to a number, but
3 we also want to make sure that the full value and that
4 we're in no case going to be qualifying for payments when
5 we really don't need them. So, I mean, we're trying to
6 be very credible and with a lot of integrity on making
7 sure and, you know, we were proactive in coming to the
8 staff and saying, "Guys, you know, this formula, the
9 original formula made sense at a time, but that's before
10 corn went up and the co-product with it, you've got to
11 factor that in and we want to work with you to come up
12 with a formula that will ultimately be more defensible
13 from a public policy perspective.

14 MR. MCAFEE: The original discussion on this
15 program occurred in '07, '08, '09, and really was a five-
16 year program up until 2010, and the final political
17 process was reduced to a four-year program. And in a
18 second political process, it's now being reduced
19 essentially to a three-year program. So from a Aemetis
20 point of view, our original presentation to our investors
21 under which we have now required this \$130 million
22 facility and put up twenty-something million of working
23 capital, was that it was a four-year program. We have
24 now gone back to them and told them that, due to the
25 dynamics of the political scenario in California, that

1 the reality is it's going to have to be reduced, and the
2 three-year compromise has been reached by all of the
3 relevant parties and legislatively is going through the
4 process. So we are comfortable with the idea that our
5 representations to our investors were not accurate and
6 that we have a need to change our expectation of how much
7 our investors will be repaid through the CEPIP Program
8 and that a three-year agreement, which we signed in
9 November of 2010 will enable us then to transition to
10 lower cost feedstocks.

11 Now, I would say that, with the lack of
12 investment in new feedstock, or in new refining
13 technology, that the operating dynamics of the industry
14 will be exactly the same in 24 months as it is today.
15 The only way we have evolved this industry is through
16 investment, and so we are interested in continuing to
17 partner with the CEC in making refining investments, as
18 well as feedstock investments so that we can wean
19 ourselves off of this rollercoaster we find ourselves on.

20 COMMISSIONER PETERMAN: Thank you. And, I mean,
21 we've talked extensively before about the original terms
22 of the program and so I don't want to rehash them all
23 here, although I think just to remind everyone that
24 funding for the 118 program is determined every year, so
25 we do not make a funding commitment more than a year

1 basis, although it's my understanding that, in terms of
2 the CEPIP Program length, that was a longer term, but
3 there was non-guaranteed funding for any year beyond the
4 first one when the investment plan was approved.

5 Following along these lines of thinking, so if
6 additional funds are not put into the CEPIP Program, will
7 these plants close?

8 MR. SCHULER: Perhaps I could attempt to answer
9 that question in a little different way.

10 COMMISSIONER PETERMAN: Sure.

11 MR. SCHULER: We were asked earlier how -- what
12 will our feedstock base be and, as these two gentlemen
13 responded in very much the same way we did, only from a
14 different perspective, we need to appear viable, we're
15 working very hard to preserve the jobs that we've created
16 here in California. To go out and convince farmers to
17 grow milo -- by the way, I'm jealous of all the milo that
18 Neil is bringing -- but in the long run, as Neil pointed
19 out, and Eric certainly did with his CX1 project, a goal
20 is to have local feedstocks -- we need farmers to help us
21 do that, we're not farmers, we're Ethanol producers; a
22 viable industry is key to that. When we go out to folks
23 and say, "Put the seed in the ground, we'll pay you for
24 it when you deliver the feedstock to us," in our case,
25 grain, then that's a question they will ask. And as Neil

1 pointed out, a very credible viable program where the CEC
2 has agreed to backstop us so that those same farmers
3 realize we'll be there to pay the bills and utilize their
4 feedstock is key. It's a tough industry. Folks will
5 shut down. Those Midwest Ethanol plants who are
6 subsidized by their states have convinced their state
7 governments to support them so that their jobs stay
8 there; we would urge that you consider the same thing.

9 CHAIRMAN WEISENMILLER: Okay, but just to get on
10 the record, I assume if these plants shut down, the loans
11 we have given you are basically gone. If you go into
12 bankruptcy, we're not going to be repaid, or at least
13 we'll be repaid some cents on the dollar.

14 MR. SCHULER: I think that's a fair statement.

15 CHAIRMAN WEISENMILLER: Okay.

16 COMMISSIONER PETERMAN: And I -- Mr. Koehler, you
17 can speak in one second -- I appreciate there is
18 incredible sensitivity as business owners to speak about
19 viability and I appreciate your comments about these
20 revenue streams are dynamic, and the reason I'm asking
21 these questions is that is -- the case that has been made
22 is that this is an immediate dire situation, and we are
23 investing public funds, and so these are the questions
24 that we have to ask in this case, which is why I'm
25 pursuing this line of questioning. Mr. Koehler.

1 MR. KOEHLER: And it is an immediate and dire
2 situation, I'm not going to sit here as a public company
3 and tell you what I think will or will not happen, but it
4 is an immediate and dire situation. So, for the record,
5 I think that's a fair statement and we're all
6 experiencing that in the Ethanol industry. You know, we
7 have said publicly that, you know, we have slowed our
8 plants down, you know, the industry has slowed their
9 plants down -- Valero, you know, an oil company who knows
10 how to do these sorts of things and is also now one of
11 the largest Ethanol producers, stated publicly in their
12 earnings announcement recently that they're running their
13 plants at 50 percent of capacity so, I mean, it's
14 definitely a situation that's hurting everyone. I would
15 like to -- and we are competing with these Midwest
16 companies that are receiving significant support. So we
17 are at greater risk without state support, there's no
18 question about that.

19 I think Lyle's point is a really good one because
20 we have, you know, we also go out to farmers and they
21 look at making decisions that require us to be around,
22 but we've had opportunities, and continue to pursue
23 opportunities, to both do CO₂ where we move the CO₂ out of
24 our Fermenters and being in fairly good urban areas, and
25 look at working with a counter party to take that over

1 the fence and turn it into carbonation and dry ice, as
2 well as looking at co-generation where, you know, we
3 don't have the capabilities from a capital basis to
4 invest, so again looking at counterparties to invest in
5 co-generation, which obviously lowers the carbon
6 intensity even further and provides more employment and
7 jobs. And what we always run up against is, you know,
8 how do we take counterparty risk over our investment
9 cycle, given the viability and, you know, with your state
10 supporting you one day, supporting you one day not, you
11 know, where is the real long term commitment to this
12 industry? So we, then -- and there's no question, I
13 think, with that consistent support it will help us make
14 the case to encourage that counterparty investment, as
15 well, so that we can leverage our facilities not only as
16 we've talked about on some of these cellulous
17 technologies and other feedstock substitutions, but even
18 some other related businesses where we can work with
19 other companies, as well. And that longer term certainty
20 is critical.

21 COMMISSIONER PETERMAN: So in terms of that
22 leveraging opportunity, then, if the request is -- and I
23 appreciate that this is just initial requests, you know,
24 \$3 million per plant -- is the expectation for these
25 companies to be viable in the next year to leverage that

1 \$3 million to get private investment? Would you need
2 additional private investment on top of that?

3 MR. KOEHLER: Well, we would certainly, in the
4 examples I gave of CO₂ and co-generation, then there would
5 be additional private investment. So this investment by
6 the state would leverage many millions exponentially in
7 terms of potential opportunities because it really is the
8 -- you know, I think there are those naysayers that say
9 this Ethanol thing didn't make sense, we should just, you
10 know, go in another direction, and we obviously firmly
11 believe otherwise and think Ethanol is here to stay for
12 very good reasons, and we should produce as much as we
13 can in the state with the best technology and the lowest
14 carbon and diversity of feedstocks. And people look at
15 this next one and a half to two years as really the
16 critical point to figure out, you know, who are the
17 survivors in this business? And we intend to be
18 survivors and with the support of the CEPIP program and
19 the other policies in the State of California, we can be
20 those survivors, and then thrivers as we develop these
21 new technologies.

22 COMMISSIONER PETERMAN: And a question we're
23 dealing with today, and we'll continue to talk about, is
24 what form that support should take and I think clearly
25 I've been on the record, and we've been on the record

1 talking about our support for some of these second and
2 third generation biofuels. Regarding the immediate
3 financial need, I did find it curious to read about
4 Aemetis purchasing their plant and about Pacific Ethanol
5 buying back some of their stock, which suggests some, at
6 least, cash flow, as well as, you know, financial
7 flexibility. Do you want to comment on that?

8 MR. KOEHLER: I can start and then Eric can
9 follow. In our case, we had a situation from a prior
10 restructuring where we did not have a full ownership
11 control of our facilities. As a public company, we have
12 public stock and we were not funding the last transaction
13 at a cash flow which has been extremely tight to
14 negative, but we were able to, with investors that also
15 share our vision and see the future viability of the
16 industry and our business model, we are able to go sell
17 shares and raise cash that way, so \$12 million that we
18 raised, \$10 million going to the equity investment of the
19 plants, which was very significant and very valuable for
20 the State of California because what that did was it gave
21 us a two-thirds ownership control, the balance being
22 shared with our lenders, but it really gave us for the
23 first time, you know, since our last restructuring in
24 2010, '09 and '10, the ability to, without having to go
25 to committee every time we wanted to make a decision with

1 our lenders, to have full operating control of these
2 facilities. And that's good news for the state, that
3 will allow us to move more quickly on new initiatives to
4 further improve our technology and our platform.

5 MR. MCAFEE: Aemetis had been the Lessee of the
6 plant in Keyes, and we're facing a very significant
7 capital investment in the property, which was constrained
8 by the fact that we didn't own it, including the CEC
9 grant that we received requiring some amendments to the
10 configuration of the plant. And so we did a transaction
11 in which we issued equity in exchange for approximately
12 \$120 million of the original cost of construction. The
13 original cost of construction was \$130 million, and then
14 another \$10 million worth of equipment came along with
15 it, so there was about a \$140 million acquisition. We
16 paid \$15 million in cash, all of which was loaned by a
17 new loan from our existing lender. So the net operating
18 cash that we invested was zero and we basically took out
19 a new loan like you would take out on your house to buy a
20 house, and then issued approximately \$120 million worth
21 of stock. They acquired 11 percent of Aemetis in the
22 transaction, so the original investors invested \$140
23 million, they'll get about \$20 million in cash and then
24 \$120 million was converted into 11 percent of our stock.
25 So net operating cash involved was zero and we expanded

1 our credit line as a part of it because we had new
2 collateral.

3 COMMISSIONER PETERMAN: All right. So you've
4 touched upon the co-product of animal feed -- and, Mr.
5 Gilbert, don't get mad at me for this line of questioning
6 I'm about to pursue -- but it's my understanding that
7 it's a good product and perhaps one could charge more for
8 it? So I'm just thinking about other revenue streams
9 here and why you're not charging more for this succulent
10 animal feed.

11 MR. MCAFEE: If you could come out with us and
12 help on the sales space, it would really be nice.

13 COMMISSIONER PETERMAN: (Laughing) We're facing
14 a situation here where we're talking about --

15 MR. GILBERT: Of all the questions I thought I'd
16 get asked today, I didn't think I'd get asked that one.
17 (Laughing).

18 MR. MCAFEE: You know, why don't we get more for
19 it? I don't know if you read a lot, but the status of --
20 I'll start off with the status of the dairy industry in
21 California is very poor today. I mean, we don't have
22 customers, we don't have an industry that's making money,
23 and they're losing money. And they're losing significant
24 amounts of money. And this doesn't exist just here in
25 the state, this exists in animal sectors across the

1 United States, but in the state it's very much for real.
2 So, you know, getting more for the product, it's very
3 difficult to do today because there's just a limited
4 amount of cash that these guys can do it. And I think if
5 the product wasn't as good as the products was, we would
6 have a hard time selling it. The other thing is, I mean,
7 when these plants start up, you know, they're producing
8 40 to 50 loads a day, and you just don't move that amount
9 of product easily. I mean, that takes a tremendous
10 amount of work, or coordination, of relationships with
11 people to get them to try it, to get them to get on it,
12 to get it going. I mean, you just -- you know, our
13 average customer takes a load each three days, and that
14 takes dozens of trucks and drivers and people and work to
15 make that happen.

16 The other thing is wet product has some benefits,
17 which I mentioned before, but it also has some
18 disadvantages, I mean, you will have some runoff, I mean,
19 there's just -- you will have a little bit of
20 variability. I think as far as price-wise, we've had a
21 fair price, a good price both for the dairymen and for
22 their producers, but I don't see a chance of getting more
23 money for the product.

24 MR. SCHULER: I might add to Dave Gilbert's
25 comments that we've been running about five years and I

1 can't remember what we sold, a ton of Wet Distillers
2 Grain for when we first started, I know some of it went
3 as cheap as \$20.00 a ton. As we tried to raise our
4 price, we had kind of palace revolts from our customers
5 who we don't have 250 customers, as Dave has done an
6 excellent job with the plants he's marketing for, but I
7 can tell you that our price today is as high as we think
8 we can possibly make it and move the product to customers
9 who, as Dave said, are really in trouble. Our price next
10 week, I think Dave sets price monthly, we set it weekly,
11 it's a FOBR price -- F-O-B-R, our facility -- it's
12 \$123.50 a ton, it ain't cheap. And if we thought we
13 could raise it \$.50 more, and not harm these guys, we
14 would have done so.

15 COMMISSIONER PETERMAN: Thank you. I appreciate
16 your comments because, especially after the comments that
17 were raised by the panelists, that the corn Ethanol is
18 somewhat subsidizing the animal feed co-product, and it
19 is the corn Ethanol and the fuel that we are focused on
20 with this program, and so you can see it's a question we
21 would have about why not be pursuing those revenue
22 sources that actually are getting the benefit, that the
23 state is benefitting the most from?

24 So a few other questions, let me look to my
25 notes. You may not be able to answer this question now,

1 but I'd be curious, and I think the Chairman was alluding
2 to this, to get to 50 percent of your production coming
3 from second or third generation biofuels, what is the
4 financial investment that would take? And part of that,
5 part of your answer may be there are still R&D venues to
6 be done, you know, we've got these different spaces to go
7 through, and I think we'll hear from some other panelists
8 going forward, but if that's where the state wants to go,
9 it would be nice to have a sense of what that total
10 dollar need would be, or at least hear your thoughts on
11 that, about what might accelerate your transition plan.
12 So you can touch upon it now if you have an answer,
13 otherwise it's something you can get back to us on.

14 MR. MCAFEE: I'd like to make a quick point which
15 is milo is an existing commodity which I think is an
16 excellent achievable step because it doesn't require much
17 capital investment at our facilities. What it does
18 require is farmer confidence, as Lyle Schuler was
19 commenting, and I think that all of our companies are
20 focused on milo as a potential feedstock, and if we could
21 provide a sense of assurance now, what program you or
22 some other agency might have, I don't really know, but if
23 we were able to provide some assurance to a farmer to
24 know that he could grow milo, we could make a rapid
25 transition away from corn, solely based upon that

1 investment.

2 COMMISSIONER PETERMAN: A quick survey for who is
3 in the audience and who is on the phone, anyone from the
4 Department of Ag here? Or Federal or State? Okay.
5 Well, great, you don't have to comment, we're just -- it
6 would be great to have those within the agricultural
7 community, particularly listening to this discussion, and
8 for those who are not here, we'll be sure to pass along
9 some of what we're hearing today, including -- especially
10 on the co-products in transcript.

11 CHAIRMAN WEISENMILLER: Yeah, because certainly,
12 again, the thing we always struggle with on, you know,
13 the innovation we're trying to get to, or the technology
14 we're trying to get to, which frankly are financially a
15 challenge now, is whether the solutions are more
16 innovation -- investing in innovation, or scale, or what
17 are the basic questions. And so, I think in 118 we've
18 had a pretty healthy amount to try to encourage the R&D
19 going forward and, again, I think that's certainly --
20 that sort of innovation is pretty clearly part of what
21 we're looking for, but in terms of the existing plants,
22 you know, we get back to this question of what do we do
23 there, we can't get in a bidding war with the Midwest,
24 frankly, on trying to deal with the financial viability.
25 But just in terms of -- but what is the right mix here?

1 And certainly if there are things that we can do more
2 through agricultural policies, potentially, then that
3 would be good to identify those and try to move those
4 into the package.

5 MR. MCAFEE: Chairman Weisenmiller, I think the
6 feedstock is an immediate transition that is low capital
7 expenditure, but what it does is it's a risk mitigation
8 issue, you know, with the great recession and other
9 concerns of commercial banks, if our farmers felt there
10 was a strong market, it's a very attractive thing to sell
11 to a local, large volume customer, and so I mentioned
12 milo because all three of our companies are, I think,
13 adequately equipped to do that immediately. But to move
14 to second generation and third generation, there is a
15 very big reality that drop-in fuels, 100 percent
16 replacement of gasoline, 100 percent replacement of
17 diesel, 100 percent replacement of jet fuel, are
18 technologies that are maturing right now and are looking
19 around and saying, "Where can I actually physically get a
20 very large fermenter? Where can I get a big \$10 million
21 utility system?" And we as a company, and other
22 technology companies we partner with, are actually
23 focused on 100 percent drop in fuels as being upgrades to
24 the outputs. A lot of our conversation today has been
25 around the feedstocks and the efficiency energy

1 reduction, etc., but I think over the next year you're
2 going to probably hear more about how these refineries
3 are making these 100 percent drop-in fuels and today,
4 commercialized already, is Biobutanol which is a 100
5 percent density, actually it's about three percent more
6 density than gasoline, but it's a corn Ethanol plant that
7 has been converted to make Biobutanol; and though that is
8 not on our radar screen, 100 percent drop-in fuel clearly
9 is. And we acquired this plant so we would have a
10 footprint to be able to commercialize rather than you
11 wondering where the next \$200 million of investment is
12 going to come from. So your question was amount of
13 investment, I think that from an investment in technology
14 continuing to invest in the academic and research level
15 work is a good strategy. There's a very diverse
16 collection of investments that have been made by the CEC,
17 I think that is a proper course and should continue.
18 These are relatively small investments -- \$2 million to
19 \$5 million. But what they end up doing is they produce
20 fruits that then get planted in an orchard. And the
21 Ethanol industry is an orchard of 210 Ethanol plants, all
22 of which are seeking that new technology. For example,
23 from U.C. Berkeley, you can then scale up because the
24 investment of \$28 billion of capital expenditure is
25 already made. And so, though today I don't think we're

1 ready to say, "Here's the way we're going to do the drop-
2 in fuel of tomorrow," I think today what we should be
3 focusing on is weaning ourselves off of corn, producing
4 Ethanol for a very large California market, preserving
5 jobs here, and continuing to invest in cellulosic
6 feedstocks, these non-food feedstocks, while also
7 investing in what the drop-in fuels future looks like.
8 Within five years, I think we're going to be talking a
9 lot about Ethanol being a valuable additive to the
10 biofuel that replaced gasoline, to the biofuel that
11 replaced diesel, because those biofuels didn't have
12 adequate octane and, so, Ethanol was that high octane
13 solution, and it's a vision of the future that's actually
14 a 100 percent biofuel future, which I think is consistent
15 with the goals we have here.

16 COMMISSIONER PETERMAN: So I just -- I appreciate
17 your analogy about getting the seeds to the orchard, and
18 as many of you noted, Aemetis has received a \$1.8 million
19 grant for Cellulosic Ethanol. Could you have taken --
20 because you have used more funding in that area, and
21 could you have done something with it? I think that's
22 what we're trying to get at -- if you had dollars, could
23 you have spent them today on --

24 MR. MCAFEE: I think too much capital would be
25 harmful to our company, we'd have to turn it down. I'm

1 joking.

2 COMMISSIONER PETERMAN: (Laughing) You know, I
3 was -- anything you say, I'm trying to -- I'm taking very
4 seriously, so I was like, okay.

5 MR. MCAFEE: I think that we have a roadmap that
6 would entail further investment and we ought to work with
7 staff to give some clarity about that.

8 CHAIRMAN WEISENMILLER: And we certainly would
9 encourage, obviously, DOD has a major effort here trying
10 to drive, you know, I mean obviously you had to test off
11 Hawaii for the Green Fleet, you know, that we're
12 certainly trying to connect California companies with
13 them. And, again, the dollars they're going to spend
14 here are going to dwarf ours, frankly.

15 MR. MCAFEE: On August 13th is the next round of
16 investment from the DOD, it's a \$30 million program and
17 we'll be participants in that, along with several other
18 major companies in California.

19 MR. SCHULER: We're all very supportive of what
20 you're trying to do. The only point I would make is
21 perhaps a point of clarification. From my perspective,
22 the proper way to frame the question is how quickly can
23 California producers reduce their carbon intensity? I
24 think, as prejudice against corn, if corn -- I'm not
25 saying it is -- if corn as a feedstock is the best way to

1 reduce carbon intensity, we should be using it. And the
2 answer to how quickly we can reduce our carbon intensity
3 is immediately. And you would even see that in sub-
4 pathways in the numbers if CARB's program of having
5 tradable credits was a little more viable. Each year, as
6 Neil pointed out, we ramp up in terms of the
7 requirements, and we're still at the very edge of that
8 program, we hope that will be viable. There are
9 incentives built in there. I would urge that the
10 Commission not -- would at least resist buying into this
11 idea that corn is bad if that is the best way to reduce
12 our carbon intensity, which I don't believe it is
13 ultimately, but it is right now. We -- that should not
14 be -- we shouldn't be penalized for hitting effective
15 goals and I would just urge that everybody keep that in
16 mind.

17 COMMISSIONER PETERMAN: I think that's a fair
18 enough point, and I would re-reframe the question to say,
19 how quickly and significantly can California reduce its
20 carbon intensity? And, as you know, the LCFS is not our
21 agency's policy, but I think the challenge is that, on a
22 spectrum of carbon intensity, corn-based Ethanol does not
23 fare well relative to some other opportunities out there,
24 but your point is taken and we truly are agnostic to corn
25 as a product, and often times I refer to it as corn

1 Ethanol simply for ease of the discussion, but I
2 appreciate you bringing up these reminder points for how
3 we use our language. Mr. Koehler.

4 MR. KOEHLER: The only thing I would add on the
5 capital investment side, and this is where I think these
6 integrative policies are critical, and your dollars, you
7 know, your \$1.00 can leverage millions of dollars, is
8 that we hold very true to these longer term policies like
9 the AB 118 programs, LCFS, Renewable Fuel Standards, and
10 what that will ultimately make is that those that really
11 have the big bucks to spend, the oil companies, obligated
12 parties under these programs, will make those
13 investments. They're starting to do it now, they don't
14 -- you know, the Renewable Fuels Standard is, you know,
15 it's not a corn ethanol mandate, it's a Renewable Fuel
16 Standard that actually increasingly means everything
17 other than corn Ethanol, LCFS, you know, clearly drives
18 us to new technologies, and it was the whole genesis of
19 that program, "Let's drive innovation, let's drive the
20 capital investment to make it happen," because you are
21 looking at capital costs and operating costs on these new
22 technologies, they're substantially higher. Continued
23 investment, integration into existing infrastructure here
24 in California significantly reduces that, but ultimately
25 it's going to have to be the large players, the obligated

1 parties, specifically the oil companies, that are going
2 to have to take these rules seriously enough and get off
3 the lawsuits, and let's roll up the sleeves and get down
4 to business and start working with the innovators out
5 there, and they are them, as well, they have their own
6 labs and efforts. And that's how we really leverage the
7 needed capital investment, is to make sure that these
8 performance standard policies stay in place and we'll
9 drive that private investment because ultimately that's
10 what it's going to take.

11 CHAIRMAN WEISENMILLER: And that's fair, although
12 I think we really all have to be realistic on some of the
13 backdrop, you know, there are times the program, I feel
14 like we're sort of King Cnut, ordering the economic tides
15 to go the other way, and that doesn't happen. And, you
16 know, Bill Lockyer and I went through this this year when
17 DOE had looked at a very innovative solar technology, put
18 a lot of money into loan guarantees for that, it turns
19 out it was a very innovative technology, but the Chinese
20 really beat the socks off of, and at that point, and it's
21 still a major election issue, and we really, you know,
22 there was an issue where the tax exemption -- CAFTA had
23 provided a sales tax exemption to that company and there
24 was a lot of question in the Legislature, "Why did we
25 provide a sales tax exemption to a company that had gone

1 bankrupt?" You know, in that case we could say that it
2 wasn't a loan guarantee, that only if they had bought
3 equipment would they have gotten that exemption, so it
4 was sort of the last tail end of the dollars. But there
5 was an awful lot of legislative scrutiny given the
6 overall challenges -- very very challenged financial
7 situation in California is in at this time of, you know,
8 Lockyer -- was the CAFTA Board really doing its due
9 diligence on these projects? And we both feel that same
10 spotlight here on these to make sure that, you know,
11 we're asking tough questions, not just to be obnoxious,
12 but frankly, you know, we will be asked very tough
13 questions, I'm sure, if we make these investments and
14 they go sour.

15 COMMISSIONER PETERMAN: And as the Chairman has
16 hit upon, these are questions that have -- people have
17 been asking for a while, and you've been present for some
18 of those forums, and we wanted to have -- I wanted to
19 have this workshop so we could just have this discussion
20 altogether in a room because I appreciate that you
21 appreciate what we need to do, and we appreciate you as
22 California businesses. We want California businesses to
23 succeed and we're just trying to work within the funding
24 framework that we have and we're not going to be able to
25 address or fix all the issues that have been raised alone

1 in this panel, I mean, most of these issues rankly are
2 beyond the Energy Commission, and even beyond some things
3 that the State can control; however, to the extent that
4 there are areas in which we can fulfill our mandate, and
5 be supportive, we like to -- we're exploring those.

6 So I could ask many more questions, but in the
7 interest of time and lunch and public comment, I'm going
8 to stop. There will be an opportunity for comment at the
9 end. Let's -- Chairman, any other questions now?

10 CHAIRMAN WEISENMILLER: No, I was just going to
11 observe that certainly if anyone wants to provide
12 anything in writing for the record, again, we've taken
13 the dialogue about as far as we can at this point, but
14 certainly for the companies -- I'm not sure of the
15 precise schedule, but I'm sure in, say, 10 days we would
16 be happy to get written comments.

17 COMMISSIONER PETERMAN: Yeah, I think there are
18 comments due on August 17th, I want to say.

19 MR. OLSON: That's correct, Chair, Commissioner.

20 COMMISSIONER PETERMAN: Okay, thank you. With
21 that, let's turn to see if there's anyone who wants to
22 make public comment now. There will be time at the end
23 of the day, I promise it will not go until like midnight,
24 but if you would like to get something on the record now,
25 please step to the microphone.

1 MR. OLSON: Or online.

2 COMMISSIONER PETERMAN: Yeah, we'll take those in
3 the room first. Sir, you're standing up, so why don't
4 you approach? And then we'll turn, after the room, to
5 online, so online, get ready. And please state your name
6 for the record.

7 MR. TRAVIS: Sure. My name is Corey Travis. And
8 I'm representing Caseus Energy. Caseus Energy is a waste
9 to energy company, so what we do is we create Ethanol
10 from a variety of waste streams, byproducts, sugar, waste
11 streams. And we create a number of other co-products,
12 animal feed, as well as probiotics for human and animal
13 consumption. But my comments on CEPIP are just, really,
14 they're not on our radar. Our company model has always
15 been to create economically sustainable products on a
16 standalone profitable basis, so when we talk about
17 incentives, that's just something that's never been in
18 our business model. When we look at a feedstock, we look
19 at how readily available is this feedstock and is it
20 profitable on a standalone basis? You know, we try to
21 use feedstocks that are not commodities, that are not
22 subject to whims of the market. And in looking at the
23 CEPIP Program, again, my only comment would be we started
24 in Wisconsin on a standalone, profitable basis, and we're
25 here in California with a commercially viable technology

1 to produce Ethanol on a standalone profitable basis,
2 without these subsidies. And we would encourage that
3 these type of technologies be allowed to continue to be
4 explored here in California, and that there are indeed a
5 number of commercially successful technologies that don't
6 rely on operational subsidies.

7 COMMISSIONER PETERMAN: Thank you for your
8 comment. Dr. Kaffka.

9 DR. KAFFKA: Hi, I'm Steve Kaffka and I'm with
10 U.C. Davis in the California Biomass Collaborative. I'd
11 just like to make a couple of comments about how I
12 understand the relationship between the Low Carbon Fuel
13 Standard and the Renewable Fuel Standard, and what that
14 means for what we call the first, second, and so-called
15 third generation fuels.

16 The Low Carbon Fuel Standard in principal is
17 feedstock neutral; what people have to do is provide the
18 lowest carbon intensity fuel possible. So, in theory, if
19 you could have the lowest carbon intensity fuel from a
20 corn grain, or a milo, or a sweet potato, or sugar beet,
21 that shouldn't matter whether it is a so-called first,
22 second, or third generation so-called feedstock within
23 the context of the Low Carbon Fuel Standard. Those terms
24 matter for the Renewable Fuel Standard. Corn and
25 soybeans, first generation feedstocks, second generation

1 feedstocks, or whatever U.S. EPA designates a second
2 generation feedstock, so therefore you have now milo --
3 why are we interested in milo? Well, it's now a second
4 generation feedstock. Is milo a more efficient feedstock
5 than corn? It may be, or it may not be. Will growers
6 grow milo instead of corn? They'll grow it if it's more
7 profitable for them to grow it if they save resources, if
8 it's more water use efficient, nitrogen sufficient, and
9 that makes sense in their farming system. So I just
10 think it's important -- a lot of these distinctions are
11 purely semantic from the point of view of the character
12 of the fuels that we want to have and, in fact, the real
13 goal of lowering carbon intensity from fuel production.
14 So I just wanted to make that comment. I'm going to be
15 speaking at a later panel, so I don't want to take too
16 much time.

17 COMMISSIONER PETERMAN: Thank you. And, Dr.
18 Kaffka, your point is well taken. We were having
19 discussions before this workshop about when to use the
20 alternatives, advanced versus cellulosic, second, third
21 generation, and oftentimes we mean them to be something
22 different, and use them differently, and I thank you for
23 highlighting where some of these terms come from. And
24 actually I appreciate when you are on a panel later if
25 you could give us a little run through of that again so

1 we'll make sure we're all using similar nomenclature.

2 Anyone else in the room want to come forward with
3 public comment at this time? I think everyone wants to
4 go to lunch. Anyone online? All right. Well, thank you
5 very much. We're going to break until 1:00. We'll have
6 lunch, and then we'll return with Panel 2, Biofuel Market
7 Outlook and Government Policies, although we touched on a
8 lot of things this morning, so hopefully we'll pick up
9 some time, then. Thank you, everyone.

10 MR. OLSON: Yeah, I think we're going to need
11 about 30 minutes for that panel.

12 COMMISSIONER PETERMAN: Terrific. Thanks a lot.

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

14 (Back on the record at 1:09 p.m.)

15 COMMISSIONER PETERMAN: Welcome. Panel 2, thank
16 you for your patience and your willingness to be deferred
17 to after lunch. I think you'll probably have a more
18 receptive audience, if you will, at least more chill,
19 either way. Larry.

20 MR. RILLERA: My name is Larry Rillera, I'm staff
21 with the Commission and this afternoon we'll do Panel 2,
22 focused on biofuel outlook and policies. We are joined
23 today by John Kneiss of Hart Energy, and Michelle
24 Buffington of the Air Resources Board.

25 John, if you would like to start?

1 MR. KNEISS: Okay. Thank you very much. Yeah,
2 my name is John Kneiss. I am the Director of North
3 America for Hart Energy Consulting.

4 COMMISSIONER PETERMAN: If you could pull it
5 towards you just a bit more?

6 MR. KNEISS: Okay.

7 COMMISSIONER PETERMAN: There you go. Thanks.

8 MR. KNEISS: All right, is that working now?
9 Okay, and Hart Energy is a publishing firm in traditional
10 oil and gas markets. We also do biofuels publications
11 and conferences, and we also have a consulting both on
12 the upstream side for fuels and the downstream side with
13 refining and traditional petroleum fuels, as well as
14 biofuels.

15 I'm responsible for coordinating those services
16 in North America and I do mostly policy work out of our
17 Washington, D.C. office. So, with that, I appreciate the
18 opportunity to speak to you and the Commission. I think
19 these are analyses information from a global biofuels
20 outlook and a U.S. and Brazil Ethanol outlook.

21 First of all, just a reminder of the policy
22 drivers here, and at the Federal Reformulated Fuel
23 Standard, and the California Low Carbon Fuel Standard,
24 and implementation of E15, which will be very important
25 as we look at these products in the advanced fuels, the

1 availability of advanced biofuels to become available in
2 the market, this is predominantly now Brazilian sugarcane
3 ethanol and, of course, biodiesel and renewable diesel,
4 and then development of commercialization and expansion
5 of the next generation. And we have some uncertainties
6 out there, unfortunately, and that's the litigation
7 outcomes we're all familiar with, and the investment
8 stability that exists in the market, whether it's private
9 or whether it's support that can come through government
10 programs and incentives.

11 The presentation, I'll just cover it quickly, the
12 biofuels supply and demand forecast; I think the
13 California situation, and Brazilian Ethanol balance; next
14 generation capacity; the exports and the imports; and
15 then some conclusions.

16 Recognizing that the RFS program and the LCFS
17 program volume increases aren't sustainable unless
18 advanced biofuel volumes greatly expand from where they
19 are today. The infrastructure that's needed in cleaning
20 the vehicles that can accommodate these volumes is going
21 to be an important function. And the LCFS reductions and
22 carbon intensity and the availability of the qualified
23 low carbon fuels, and what are the alternative options?
24 I think the goal is certainly to make sure that these
25 programs succeed, that's the purpose. So it's

1 significant that we look at where the advanced are in the
2 context of what we have currently available.

3 So the next slide, the outlook for the United
4 States -- and I apologize because this outlook we do on a
5 global basis, so it's in liters, and I'll translate them
6 to billions of gallons a year. But in 2015, as an
7 outlook, the supply would be about 15 -- this is in the
8 conventional plus some additional advanced Ethanol
9 biofuel that will be available -- about 15.3 billion
10 gallons. The demand levels will be about 13.5 to 13.8
11 billion gallons, we're still working some of those
12 numbers. In 2020, 16.1 billion with a demand of about
13 over 15, and then, in 2025, we have 16.4 and a demand,
14 again, of 14.6. And I'll explain why and what is
15 happening there. I won't go through the biodiesel, and
16 we'll focus just on the Ethanol.

17 But in the Ethanol findings, this again is our
18 outlook. We see increases are dependent on E15
19 penetration into the marketplace, and probably a
20 restructuring of the reformulated gasoline program in the
21 Renewable Fuel Standard Program down the road. We see
22 certain issues, of course, that are all recognized, we
23 don't have to go into details. Corn Ethanol production,
24 I think, will be stable during this forecast period,
25 however, the Cellulosic Ethanol forecast that we have

1 right now is only to about a billion gallons of
2 availability, technology hurdles and other investment
3 hurdles right now.

4 COMMISSIONER PETERMAN: On this slide, what are
5 the assumptions about the persistence of State and
6 Federal subsidies for Corn Ethanol?

7 MR. KNEISS: Well, the Federal subsidies, there
8 aren't any, the blender tax credit expired last year,
9 there was no longer either an import tariff applied.
10 Most states have incentives for production -- not
11 production -- for the investment in building facilities.
12 We're not aware of too many that have a direct subsidy of
13 production, or for blending of Ethanol.

14 COMMISSIONER PETERMAN: And is that the same case
15 in other major Ethanol producers internationally?

16 MR. KNEISS: Well, the other major producer,
17 being Brazil, there are price controls set for both
18 gasoline and for Ethanol down there, and the Brazilian
19 market for Ethanol use is dependent on the global
20 economics for sugarcane as to where the product gets
21 diverted and made, as well as what the price control and
22 mandates are for the percentage use in the gasoline's
23 pool. They recently reduced that down to 20 percent of
24 what used to be 25 percent mandate in the pool.

25 Okay. Next slide. In the California outlook

1 there is certainly a much greater demand and I won't go
2 through the numbers here -- a billion plus gallons a year
3 for Ethanol demand and, again, presuming a 10 percent
4 blending into the gasoline market. Production as we know
5 is very limited right now, a 300 million gallon range.
6 That kind of turns out and, again, there's a decrease
7 that will occur over time in terms of what the gasoline
8 pool is. And again, there's a similar, trying to make up
9 for the biodiesel. We'll go to the next slide, which is
10 the Brazilian market.

11 Okay, the Brazilian Market Outlook. Domestic
12 demand growth has exceeded the supply in that country.
13 Part of this is due to the light-duty vehicle expansion,
14 they have sales records every year for the past eight
15 years, the vast majority of Flex Fuel Vehicles, the
16 market itself is made up of several options of fuel, a
17 gasoline-only, a 20 percent blended, plus a hydrous
18 Ethanol blend, and the consumer is a very savvy consumer
19 there, they pull up to the pump, they have a little
20 calculator, they look at the pricing, and they type out,
21 they know the energy densities for these products, and
22 they then take the best choice based on the economics and
23 the price they're paying at the pump.

24 Pricing of Ethanol versus the gasoline down
25 there, the gasoline price, as I mentioned, are

1 controlled, so are sugar price controls that exist down
2 there, and of course, then how the producers decide what
3 to make is dependent on the price of sugar, not so much
4 the price of Ethanol that they get. So sugarcane supply
5 growth has not kept pace with 2008 -- now, this is the
6 cane, the raw material that goes in to make both of these
7 products -- since the 2008 financial crisis, the cane
8 producers have not reinvested into their production,
9 expanded it, or the replanting through the seven-year
10 cycle, and then, of course, the sugar versus Ethanol is
11 dependent upon the global sugar commodity markets, and in
12 the case of this forecast where we're showing kind of the
13 different products that are made, whether it's hydrous
14 that goes directly as a fuel, anhydrous that goes both as
15 export market, as well as consumption with gasoline, and
16 the red line in there shows what the net export levels
17 are, and that cycles along with the price of sugar in the
18 global market, not on the price for the Ethanol that
19 they're getting, okay? So you can see in the recent,
20 we've had a serious decline in terms of what has been
21 available in that market with now our projection that
22 they're going to move toward an increase in exports.
23 This is the fact that the correlation is, when sugar
24 prices globally drop, okay, the consumption, then, of
25 ethanol -- also there's more Ethanol made and therefore

1 they can make more Ethanol exports available into the
2 marketplace, including to the United States.

3 COMMISSIONER PETERMAN: I want to ask a
4 clarifying question on that slide. So it's my
5 understanding that they were net importers? Are they net
6 importers now? I'm looking at this, maybe that was
7 incorrect.

8 MR. KNEISS: No.

9 COMMISSIONER PETERMAN: Okay.

10 MR. KNEISS: No, but there is certainly, I think,
11 a circular trade that's occurring.

12 COMMISSIONER PETERMAN: Okay.

13 MR. KNEISS: Because of the policies that exist
14 in our country and their country, with a mandated volume,
15 so there's Brazilian Ethanol that is coming to this
16 country and we are sending corn Ethanol down there.

17 COMMISSIONER PETERMAN: Thank you.

18 MR. KNEISS: Okay, so the key question in Brazil,
19 of course, is how much exportable Ethanol is going to
20 exist over the timeframes and as shown in that chart?
21 The next slide is one about next generation biofuels.
22 And these are capacities both for operating and for
23 proposed projects that are currently out there,
24 recognized where they're kind of in construction, they're
25 moving forward. Operationally we have, oh, less than 100

1 million gallons per year, and this includes, of course,
2 renewable diesel, let's call it, the hydrogenated animal
3 fat; and then cellulosic with a little bit, some
4 Biobutanol, the projections, and I will have to find out
5 exactly what that timeframe is for that proposed level,
6 whether that's over the next two years, again shows
7 clearly less than a cumulative billion gallons per year.

8 COMMISSIONER PETERMAN: Yes, I would be
9 interested in knowing a bit more about that proposed --
10 and specifically what qualifies as proposed, is it a
11 company announcement? Is it a loan? You know, what's
12 the criteria for that category?

13 MR. KNEISS: Yeah, we take -- it's not just
14 press release announcements, it's where they have some
15 financing, where they have announced lease construction
16 starts, and where they have usually off-take agreements
17 are some of the criteria. I have other staff that do
18 that, so I can check to get exactly what criteria go into
19 those. Okay? And then what is the next generation --
20 oh, okay, the next slide which shows about exports, we've
21 already covered that, we've had a lot of discussion on
22 it, it shows, of course, the dramatic increase in exports
23 as we've expanded the supply and production of corn-based
24 Ethanol here in the States. The last -- the first four
25 or five months of this year, there has been a decline

1 partially because production has dropped as a result of
2 basically over-supply economics, things like that. But
3 the trend line, overall, has been increasing. I did look
4 at -- I thought I wrote some numbers down of how much we
5 have right now -- no, I didn't, I don't have what our
6 total exports are so far this year, but the trend line
7 has been increasing because of, as we heard earlier, the
8 fact that we're in an over-supply position with Ethanol,
9 we've had pricing challenges and stresses mainly because
10 of the price of corn. And I think that there's also the
11 E10 blend wall that's occurred in the market.

12 COMMISSIONER PETERMAN: I was curious about this
13 Canadian wedge, it seems to be consistent over the last
14 couple of years, and could you just elaborate on why that
15 is?

16 MR. KNEISS: Yeah. Canada has implemented a five
17 percent renewable content for gasoline as well as, I
18 think, it's two percent for diesel fuel. So several of
19 the provinces also have a higher mandate of 7.5 percent
20 and Quebec, I think, is trying to move to a 10 percent.
21 So for the most part, they are constrained in their
22 production levels, so they basically take our product.
23 There is some blending and product that comes back to the
24 U.S. along border states on the Canadian border. And you
25 can see, of course, the interesting developments over the

1 past year or so with Brazilian imports that are
2 occurring.

3 The next slide shows Ethanol net imports. Again,
4 these are imports into the United States, and we can see,
5 of course, this interesting trend where we have become a
6 substantial net exporter and, in fact, a major global
7 Ethanol supplier as a result of the market dynamics going
8 on out there.

9 So looking at that, I do want to make a comment
10 about those outlooks and forecasts. One of the biggest
11 factors is going to be the decline in gasoline
12 consumption in the United States, predominantly driven by
13 the fuel efficiency standards that exist, the corporate
14 average fuel economy standards. To give you an idea, our
15 forecast, we do a global refining study and currently a
16 little over 8.5 million barrels a day, 138 billion
17 gallons, I guess, maybe a little more, of gasoline; by
18 the year 2025, that is going to be down to about 7.3
19 million barrels a day, we're going to lose over a million
20 barrels a day of consumption of gasoline. Now, the
21 importance of that is, taking biofuels, particularly
22 Ethanol, for instance, and blending it, we've got
23 constraints there, we're at the physical E10 blend wall
24 now, we're not quite there in the compliance standpoint
25 for the Federal RFS, and we have some time because of

1 bank credits, the same that will occur with the Low
2 Carbon Fuel Standard, and our projections, most recent
3 that we're still working on, is we can potentially hit an
4 E15 blend wall within the next couple of years, presuming
5 that you get a dramatic implementation and overcome those
6 hurdles and challenges. So the bottom line, I guess the
7 last slide, you know, conventional Ethanol supply and
8 demands are generally in balance, the RFS program, we
9 believe there's some reform that will take place, but
10 exactly what that will look like is unclear, to balance
11 out what the mandates are compared to what the
12 commercialization, particularly in the advanced category,
13 the LCFS, we require greatly expanded advanced biofuels,
14 and the availability of lower CI options, some of which
15 will come from in-state, we believe, but a lot of it will
16 be pulled from other areas to meet the requirements.

17 The next generation biofuel capacity expansion is
18 somewhat in question as to how those investments occur
19 and, of course, the Brazilian Ethanol availability
20 depends on domestic demands and the global sugar markets.
21 Europe, of course, has their own program, there's going
22 to be a pull for that product there, too. And then the
23 E15 expansion forecast.

24 I think the Ethanol industry, as we heard this
25 morning, is indeed stressed with corn prices, blend

1 walls, you know, the RFS credit bill that occurs, that is
2 really going to, I think, impact and shake out -- there
3 have been foreclosures of plants to significantly produce
4 the Valero and ADM. We think there are others and we're
5 not quite sure just how far that shake-out will occur,
6 there are decreases. So I think the bottom line is
7 looking at feedstocks as an issue, what types and
8 sourcing, particularly for the use of agricultural type
9 products. Those have to be local. You can't shift them
10 like you do crude oil in a huge tanker and move them half
11 way around the globe. The products that are made of
12 Ethanol, where are we going to put it if we keep moving
13 Ethanol? The importance for development of some of the
14 advanced drop-in type fuels and some alternatives,
15 whether it's Biobutanol or some other products. And then
16 I think the key issues are stability, both in investment
17 and the risk and the policies that we have, and the
18 confidence that occurs. These are farmer decisions,
19 producers of biofuels decisions, and most importantly,
20 consumers with the confidence. There is a lot of stuff
21 out there about issues with E15. I field calls every day
22 about that stuff and, you know, we've got a consumer
23 issue there. And I thank you very much.

24 COMMISSIONER PETERMAN: Thank you. I was
25 wondering if you had any comments on -- you're talking

1 about feedstocks -- on the grain sorghum that was
2 discussed in the earlier panel, as well as any additional
3 reflections upon what you heard this morning.

4 MR. KNEISS: There's an interesting comment that
5 the President has made, "All of the above," as part of an
6 energy strategy. I think -- I've been in the fuels
7 business since the mid-80's, well, traditionally on the
8 petroleum side, but in the last 15 years, 18 years, with
9 biofuels. The question becomes, 1) how do you make the
10 economics work? So you've got to be able to have
11 feedstocks that are viable on an economic basis to come
12 in to the producer. Secondly, you have to have your
13 technology to develop the product. Cellulosic -- the
14 first time I heard about cellulosic Ethanol being
15 produced was in 1992, as the Reformulated Gasoline
16 Program was being worked out for the Rules to start in
17 1995, and a concern about the oxygen levels. That
18 program required oxygen content of the fuel, and there
19 was a debate about where we were going to get the
20 products to blend gasoline. There was, of course, MTBE,
21 you're very familiar with, but there was also the debate
22 about at that time whether there would be enough Ethanol
23 because the presumption was that most comes from Ethanol
24 and saw a presentation that it was five or six years away
25 from commercialization. In 2002, we're still -- we're

1 much closer, but are we there yet? So I think the
2 products, sorghum, those are I think viable products, the
3 question is -- there was a comment made about convincing
4 the farmers that it is worth the risk for them to produce
5 that stuff, produce it, and that you're going to have to
6 have for them an off-take agreement over a long term.
7 And they're going to have to be able to compete against
8 other feedstocks that go in, and policies can help drive
9 that, you know, the low carbon fuel that moves towards
10 non-food, the non-corn, or whatever you want. So I hope
11 that kind of gives you some insight. You know, it's a
12 challenge, it is a challenge of how do you do that. I
13 wish I had the answers for the investment side of it
14 because, whether it's government investment on the R&D
15 side, which I personally believe is appropriate, on some
16 of the development side toward, say, pilot plants
17 certainly, but at some point as you move to
18 commercialization, you've got to be able to allow the
19 venture capitalists to take it on because they have to
20 decide what the winners and losers in the marketplace
21 will be.

22 CHAIRMAN WEISENMILLER: Yeah, I just have one
23 question. Do you have anything to add in terms of the
24 relative competitive position of the California projects
25 in the overall industry?

1 MR. KNEISS: I haven't studied the projects that
2 you have closely enough. From what I heard today, I
3 think they're all certainly viable projects and I think
4 worthy. The question is how much more -- there's going
5 to need to be additional investment, you know, they can't
6 make a go just with these amounts that -- they have to
7 pull additional investments to move them forward, and
8 this may be the seed money that they need to go and
9 convince other types of investors to get involved.

10 A big thing that's occurring that we've seen is
11 the movement towards kind of "bolt on technologies" where
12 you take existing facilities, this is happening certainly
13 in the Midwest, and looking at how you use other
14 feedstocks, leverage the existing capacity, take down --
15 you know, Ethanol facilities, they cycle through
16 fermenters, well, maybe you can devote one all the time
17 to something else. And I think that that's probably the
18 way to go because a grassroots cellulosic facility at a
19 full commercial scale level, 30 million, 50 million
20 gallons a year, is enormously expensive, hundreds of
21 millions of dollars and that's a lot of risk.

22 COMMISSIONER PETERMAN: Can you give us some
23 estimates of what some of the Midwest states have
24 invested in terms of subsidies, even for the capital?

25 MR. KNEISS: I'd have to search that and can get

1 back to you on those because I don't know them off the
2 top of my head -- investments.

3 COMMISSIONER PETERMAN: If that's something you
4 have access to, otherwise our staff will search it, as
5 well, if you're just going to go on Google, but I figured
6 I'd ask you since --

7 MR. KNEISS: I know -- we -- we have done -- we
8 do an annual state review and invest -- it's not
9 investments, it's incentives review, you know, we do
10 contact the states themselves, but I have not worked
11 directly on that.

12 COMMISSIONER PETERMAN: Thank you. We'll turn to
13 our next panelist. Thank you for your patience.

14 MS. BUFFINGTON: Oh, no problem. I'm Michelle
15 Buffington, I work at the Air Resources Board. I've been
16 working on the LCFS since 2007 when it was -- the process
17 was initiated. I was just going to give a little bit of
18 background on the LCFS. It was a discrete early action
19 item of AB 32 where the goal is to reduce the greenhouse
20 gas emissions from transportation fuels by a minimum of
21 10 percent by 2020. And this is relative to a gasoline
22 and diesel baseline. It was approved by the Board in
23 April of 2009, 2010 was a reporting year so that we could
24 have regulated parties and ARB could test out the system,
25 and then this last year, 2011 was the first year of

1 implementation.

2 So as some of the previous presenters discussed,
3 the LTFS is a performance-based standard. It's different
4 from the RFS2 in that it does not mandate any particular
5 fuel volumes. We've designed the program so that
6 regulated parties can be innovative and come up with the
7 best ways to reduce our carbon intensities to comply with
8 the regulation.

9 I was going to talk in a little bit more detail
10 about carbon intensity, but it seems like that's
11 something that everybody is familiar with, but it
12 includes the Well-to-Wheels emissions of a fuel. So
13 fuels with a CI below the standard for a year generate
14 credits, and those above the standard generate deficits.
15 And regulated parties, which are refiners, producers and
16 importers are required to show that their fuel pool for a
17 year in aggregate does not exceed the carbon intensity
18 standard for that year.

19 So the way that we had designed the program is
20 that the compliance -- we have a compliance schedule that
21 sets it at a goal year by year and it starts out at a
22 very slow ramp so that there is time for innovation to
23 occur and investments to occur, but that by 2015 we are
24 requiring much steeper reductions in the carbon intensity
25 of fuels.

1 The regulated parties in the program have several
2 ways to comply and this includes any combination of using
3 lower carbon intensity fuels, using credits that they've
4 banked from previous years from using low carbon fuels,
5 and buying credits from other regulated parties. So I
6 know that there was some discussion about the cost of
7 credits that are currently in the system, and I'll talk a
8 little bit more, I did provide a handout on the credits
9 that are in the program.

10 But right now, we've just -- I think we're
11 beginning a contract to start building a trading
12 platform, so one of, I think, the limitations of the
13 trading that's happening in the LCFS is partially because
14 there are so many credits generated and people are
15 meeting compliance, so there's not a need to do the
16 credit trading, but also that there's not an easy access
17 platform in order for them to do it, so we're trying to
18 build something to assist in that.

19 But I think what I'd like to do is look at the
20 handout. You all have color copies and then there were
21 some black and white copies for the audience. This is
22 the 2012 LCFS Reporting Tool, Quarterly Date Summary. So
23 every quarter staff is going through our reporting tool
24 and looking at the credits and deficits being generated
25 by regulated parties. So based on this reporting tool

1 and our data from the reporting tool, currently regulated
2 parties are meeting the Low Carbon Fuel Standard by using
3 lower carbon corn Ethanol to blend -- to make E10. But
4 this strategy by itself may not see them through to 2020,
5 so the low carbon corn Ethanol can be a bridge that gets
6 us to our final goal of a 10 percent reduction, but it
7 needs to be -- that bridge needs to be there in order for
8 us to get to those advanced biofuels and we can see that
9 that is how regulated parties are relying on the fuel in
10 order to meet the standard.

11 So the credit -- the take-home message of this
12 report, the handout that I have here, is that the LCFS is
13 working. We had 79 regulated parties report in the
14 reporting tool. They generated a little over 500,000
15 metric tons of deficits, and over a million metric tons
16 of credits. Of these credits, 68 percent were from low
17 carbon intensity corn Ethanol, 17 percent were from
18 sorghum sugarcane or waste beverage Ethanol, seven
19 percent were from CNG, and six percent were from
20 biodiesel. Almost 200,000 credits were produced in-
21 state, this is 21 percent of the low carbon corn Ethanol
22 credit percentage, and 16.5 percent of the total Ethanol
23 credit percentage, and this has been stable through 2011.
24 So we are seeing that the corn Ethanol produced in the
25 state is helping regulated parties to comply with the Low

1 Carbon Fuel Standard.

2 Also, the regulation has two formal reviews built
3 in, and the first one was completed last year with an
4 advisory panel -- it was a large panel -- and the next
5 one will be done in 2014 to 2015. And the purpose of
6 this review is to go through and look at all facets of
7 the program, including taking into account projections
8 from companies to determine how the best ways in which
9 people can comply. Again, as a performance standard, we
10 are not proscribing a particular way to get to the end
11 point, but we do have to make sure that there are ways to
12 get to the endpoint, and so the review process is a way
13 in which we're establishing that.

14 So one of the ways -- again, the main way that
15 the regulated parties are complying are through blending,
16 and we will -- if that is the method that they choose to
17 comply throughout the entire compliance period, we will
18 hit a blend wall, or there will be a large amount of E85.
19 And so, because of the LCFS and other reasons, the RFS2,
20 the ARB is considering E15. But in order for E15 to be
21 used in the state, there are many hurdles that it has to
22 go through for the process, and this includes multi-media
23 evaluation, which is a process that includes ARB and many
24 other agencies, the engine testing that needs to be
25 completed, public workshops that are part of our formal

1 rulemaking process, and there are several considerations
2 related to E15 that need to be addressed during the
3 rulemaking process, including the compatibility with
4 petroleum pipelines, recovery issues, vehicles and
5 fueling hardware, as well as identifying any possible
6 engine and vehicle performance impacts. And this
7 rulemaking can take anywhere between two to three years.
8 And so, if we are to be blending Ethanol, if Ethanol
9 happens to be the route that regulated parties choose to
10 comply, the lower the carbon intensity of the Ethanol,
11 the slower it takes for us to hit the blend wall. And so
12 any measure that we can take to help alleviate us getting
13 to the blend wall, or encourage the growth or the
14 investment in low carbon Ethanol, we should take
15 advantage of those. That's all I have.

16 COMMISSIONER PETERMAN: Thank you. And thank you
17 very much again for being here. Did ARB -- or does ARB
18 -- have projections for the value, the expected value of
19 the LCFS credits in each of the compliance years? And if
20 so, are the credits trading at the price expected?

21 MS. BUFFINGTON: We don't have any projections on
22 the price of credits. The quote of the 14 to 22, that's
23 around what we are also seeing -- we are -- ARB is not
24 going to set at this point prices. We are looking into a
25 flexible compliance mechanism, it was one of the ideas

1 that had come out of the advisory panel that we held in
2 2011, and it was brought up in a way so that we could
3 help provide some stability for investment because we've
4 been -- a lot of companies have been saying that because
5 of the uncertainty around the program because of
6 regulations that we needed to help develop something to
7 provide the certainty. And so staff is considering
8 developing a flexible compliance mechanism that would
9 help relieve some of the pressure if the credits in the
10 market were not abundant.

11 COMMISSIONER PETERMAN: My read of the figures
12 you provided, though, is that even with ongoing or
13 potential legal arbitration that parties are still
14 meeting their obligated requirements?

15 MS. BUFFINGTON: That's correct.

16 COMMISSIONER PETERMAN: You mentioned that, in
17 2015 the carbon intensity decline expected ramps up
18 significantly?

19 MS. BUFFINGTON: Uh-huh.

20 COMMISSIONER PETERMAN: Can you speak to it on a
21 very general sense in terms of the different types of low
22 carbon fuels and, as you know, we've been talking today
23 about corn versus some other feedstocks and what, for
24 example, corn Ethanol's carbon intensity would be higher
25 than what the targeted one is. I'm just trying to get a

1 sense of how long a blending strategy with corn Ethanol
2 will meet the LCFS obligation.

3 MS. BUFFINGTON: Staff has provided over two
4 dozen compliance scenarios that show different mixtures
5 of fuels and Ethanol, whether it be sugarcane or corn, we
6 can help provide lead to compliance by 2020. A totally
7 blend only strategy, though, by 2020 will probably not
8 get anybody to that point, however, since the beginning
9 of the program, we have seen many companies coming in and
10 applying for lower carbon intensities for their corn
11 Ethanol due to innovations at the facilities and, so, due
12 to that drop, we used that as sort of a baseline for how
13 the carbon intensities will change over time, and so we
14 think that corn Ethanol will continue -- the carbon
15 intensity will continue to decrease over time due to just
16 improvements of the facilities and the co-product values
17 and becoming more efficient. So we see biofuels as one
18 way to meet compliance for the LCFS, but we also include
19 things like alternative vehicles, electricity and
20 hydrogen vehicles, CNG vehicles on the heavy duty side,
21 and biodiesel renewable diesel on the diesel side.

22 But one of the main components of the program is
23 this credit trading, the concept of the credit trading,
24 and so the more credits that companies generate in these
25 early years, the more that they'll have leverage in the

1 later years. And so the carbon intensity of the fuels
2 that we're seeing today, as they get lower, we're hoping
3 that the innovation would happen, that they would get
4 lower before 2015 so that they can bank these credits
5 because, again, in order to do a blending, the only
6 scenario you have to -- you have to have credits banked
7 in the early years.

8 CHAIRMAN WEISENMILLER: Yeah, a couple questions.
9 One is simple, but for purposes -- for the participants
10 in this workshop, it probably would good if you could
11 file on our record the recent ARB vision document so we
12 can get a sense of where biofuels fits in the overall
13 scheme.

14 MS. BUFFINGTON: Are you referring to the Vision
15 2050 Plan that they --

16 CHAIRMAN WEISENMILLER: Yeah.

17 MS. BUFFINGTON: You know, I actually can't go on
18 the record on that because I'm not really --

19 CHAIRMAN WEISENMILLER: No, I was just wondering
20 if you could submit later on into our docket --

21 MS. BUFFINGTON: Oh, yes, yes, I will do that.

22 CHAIRMAN WEISENMILLER: And I was just trying to
23 get a sense of, in terms of the E15 rules, the soonest
24 and the latest that they might be applicable in
25 California.

1 MS. BUFFINGTON: You know, again, this is --
2 depending on the amount of research that has been done
3 already on E15 and its impacts on vehicles and emissions,
4 it's a -- I had written down -- I'll say this -- in my
5 presentation, I had one to three years, it was modified
6 to two to three years plus. So it is definitely -- we
7 have -- the regulatory process is just a long process, it
8 takes at least --

9 CHAIRMAN WEISENMILLER: We've been there.

10 MS. BUFFINGTON: -- yeah -- it takes at least a
11 year for us to get all of the research done, and then
12 another year of workshopping and gathering, you know,
13 working with the public to get it all together. So at
14 the very minimum, if everything went smoothly, it would
15 be two years, but we know how that doesn't quite work,
16 so...

17 CHAIRMAN WEISENMILLER: It just seems like at
18 least some of these companies are pretty desperate on
19 getting that in place, so -- at least in terms of
20 affecting their viability.

21 MS. BUFFINGTON: But again, the concept of E15
22 becomes important if your carbon intensities do not keep
23 reducing.

24 COMMISSIONER PETERMAN: I think our staff has a
25 couple of questions, so I'll turn to them.

1 MR. SCHREMP: Thank you, Chair. Hi, Michelle.

2 MS. BUFFINGTON: Hi.

3 MR. SCHREMP: Thank you for coming today. I'm
4 Gordon Schremp with staff at the Energy Commission. Two
5 questions, one is I think you were talking about the
6 timing, and that's from when you would actually initiate
7 that process. Is that correct?

8 MS. BUFFINGTON: Yes.

9 MR. SCHREMP: Have you been requested, or have
10 you started that process?

11 MS. BUFFINGTON: E15 is on the table for
12 discussion. We have not begun the process of researching
13 the fuel, started any of like the multimedia evaluations.

14 MR. SCHREMP: So is there an internal timeline to
15 actually start that maybe later this year? Or are you
16 waiting to maybe get some outside stakeholder signals to
17 start the process?

18 MS. BUFFINGTON: We are having discussions
19 internally, but we always, you know, we welcome -- if
20 there's external support for us to continue, I'm sure
21 that that would be received, well received.

22 MR. SCHREMP: Okay, great. Thanks. The other
23 question I had is your excess credits you're showing in
24 your reports which these reports are really good and
25 helpful, and we were also forecasting excess credit

1 billed in the early years just like you guys are showing
2 the market is actually doing that. But it's my
3 understanding that part of your program is that, if oil
4 companies were using a certain type of crude oil that was
5 potentially high carbon intensity, excess credits today
6 we're generating as a company may be in question, we need
7 to either offset that deficit because of that type of
8 crude oil they've already used, or that those excess
9 credits they generate would be retired and not available
10 in the marketplace. So do you have a sense, or can you
11 provide us with some information on what portion of the
12 excess credits are from those kinds of obligated parties?

13 MS. BUFFINGTON: At this point, I cannot, but I
14 could definitely do some research and get back to you.
15 So you're wondering what portion of the credits could
16 possibly be retired if the high carbon intensity crude
17 provisions were -- stayed the same or --

18 MR. SCHREMP: Yes, that's correct. That would be
19 great. Thanks, Michelle.

20 COMMISSIONER PETERMAN: Considering we have these
21 two experts in front of us, let's allow for some very
22 limited audience questions of these panelists, if anyone
23 has one, please come to the microphone. Dr. Kaffka,
24 please.

25 DR. KAFFKA: Steve Kaffka, Biomass Collaborative.

1 I would like to ask John Kneiss what he thinks the real
2 prospects are for under what conditions California will
3 be able to compete for what might be a limited supply of
4 Ethanol from Brazil to allow it to comply with the Low
5 Carbon Fuel Standard, basically carbon intensity pathway.

6 MR. KNEISS: Our -- like all things, it's going
7 to depend on the economics, what's the price that that
8 product is going to bring in this market, okay, by the
9 regulated parties for compliance. Now, our assessments,
10 our analyses does presume that a substantial amount of
11 the Brazilian Ethanol that becomes available to the U.S.
12 will be coming here and will be a substantial amount.
13 Now, again, that product -- there's going to be an
14 enormous pull to Europe for Brazilian Ethanol and it's
15 going to be several years until we get back to a
16 favorable condition in Brazil to begin to have them
17 increase their exportable volumes, that's several years
18 out yet, at least. Now, a lot is going to happen in that
19 time if you have in-state development of well qualified
20 low carbon fuels, they may be pretty price competitive to
21 Brazilian Ethanol and there's going to be a need for that
22 fuel as an advanced biofuel on the renewable -- under the
23 Federal Renewable Fuel Standard. So our projections are
24 that a fair amount will come here -- not all of it, but
25 the price points are going to be decided for the most

1 part --

2 MR. OLSON: John, I wonder if you could just
3 elaborate on what you think that number, that
4 significance is?

5 MR. KNEISS: What number?

6 MR. OLSON: The volume of sugarcane Ethanol
7 coming to California. And maybe another question is,
8 does it have an impact on price, overall price here? Is
9 it a price maker and does it -- what does it do to the
10 pricing of everything else?

11 MR. KNEISS: That's a good question. I don't
12 know if we have my colleague from Houston that is
13 connected, Rafael Hudson? He is our expert in the
14 Brazilian Ethanol market. Is Rafael there? Looking at
15 that, I mean, looking at the exportable amounts several
16 years out, globally reaching a little over five billion
17 gallons total, 5.5 billion gallons total in 2015 or so,
18 if we take that number, you know, there's going to be a
19 considerable amount taken to Europe only because the
20 demand is there and the pricing that will go, we'll be
21 50/50 U.S. and Brazil, Brazil exports to a number of
22 other markets also. I would say that that would probably
23 be -- I don't think we've done specific modeling to say
24 how much is going to come here. We're looking at in our
25 forecasts I think about 300 or 400 million gallons less

1 than what was imported traditionally out of Brazil back
2 four or five years ago.

3 MR. SCHREMP: And -- Gordon Schremp with staff --
4 just a quick follow-up. The reason Europe is wanting to
5 import cane Ethanol from Brazil is because?

6 MR. KNEISS: The Renewable Energy Directive that
7 mandates content in their transportation fuel market, and
8 there's limited products that fulfill their sustain --
9 and plus they've got sustainability criteria being
10 applied. So the RED in Europe is going to draw the
11 product once it becomes available.

12 MR. OLSON: John, this is Tim Olson again. I
13 didn't -- I don't know if you responded to my question --
14 if you have a response on the price for the --

15 MR. KNEISS: The price, no, I don't know what the
16 price forecast -- I don't think -- we don't do -- well,
17 we don't do commodity modeling, but I will check and find
18 out from our Houston staff if they do have some pricing
19 projections in there. There may be some stuff in the
20 U.S. Brazilian Ethanol look that we did, I think there
21 might be some forecasts and I'll get that to you. And I
22 don't know if that's specific to the price that might be
23 paid in California, I think it's a price -- and that's
24 for the U.S.

25 MR. OLSON: And that's information we can put in

1 our public record?

2 MR. KNEISS: Yeah.

3 MR. RILLERA: Any other public comments in the
4 room?

5 COMMISSIONER PETERMAN: Actually, I'll just ask
6 one more question. I don't know if anyone from the
7 Ethanol industry, one of our panelists from the first
8 panel wanted to comment -- and feel free to or not to --
9 about what your experience so far has been participating
10 in the LCFS market.

11 MR. KNEISS: I didn't quite understand --

12 COMMISSIONER PETERMAN: Oh, it was more for a
13 panelist from the first panel about their experience in
14 the LCFS market, to the extent, you know, I just want to
15 get a better sense of are you selling your credits to
16 other parties? Are you retaining these until future
17 years when they may have higher value? I just want to
18 get a sense of perhaps why or why not the economic -- the
19 revenue stream was not as you --

20 MR. KOEHLER: Well, we expected that the value
21 would be less in the earlier years, it hasn't been a
22 value, and generally the obligated parties want to
23 purchase our Ethanol, so that's a good thing, they
24 generally want the LCFS credit to be attached to the
25 Ethanol, so that's typically how we sell it, you know,

1 given the need for the cash flow, even though it's not
2 what we would like, it's better than zero. We have
3 retained some of that credit just to have a small hedge.
4 Interestingly, we also had some obligated parties who,
5 when there have been some imports into California from
6 Brazil. And when they do that -- because you can see
7 from these balances they've been ahead of the curve, they
8 have built up credits, and they also have differing views
9 as to the outcome of the lawsuit, and this gets back to
10 the certainty and hopefully getting through that. I
11 think some of the obligated parties think the LCFS will
12 go away, and so they're not particularly motivated to
13 build a lot of credit. So we've had some pushback from
14 some -- this month, this quarter, we actually would
15 rather buy your Ethanol without any credit attached
16 because they've been so far ahead, and that's fine, we've
17 had -- it's a minority, but we do and that allows us to
18 keep some of that credit. So it's a market that is still
19 developing, it's still, you know, until we get to next
20 year when you see a pretty good jump up in the
21 requirement, and I think more clarity on the lawsuit, it
22 will definitely help provide more value.

23 COMMISSIONER PETERMAN: And can you do the
24 numbers for me and just give me a sense of if you sell
25 the Ethanol with a credit, how much that credit value is

1 of the total revenue you might get, or just an estimate
2 on what it would be for -- how do you sell the Ethanol?
3 Is it in gallons?

4 MR. KOEHLER: Well, it's in cents per gallon, so
5 there are formulas based on -- OPIS does print a price
6 discovery point on a daily basis for, you know, 90.1 on
7 the carbon intensity, ours is 80.0, so then you can
8 extrapolate between the 90.1 and the 98, and that has
9 been in the range of one to three cents a gallon of added
10 value, so not, you know, it's maybe a little bit marginal
11 on a relative basis. What OPIS -- you know, it's very
12 hard to really -- not a lot of transparency and it's
13 difficult to really discover that pricing and what we're
14 just starting to see is -- I think, oil companies are
15 taking it a little more seriously in terms of the credits
16 -- we're just starting to see a very few, but at least
17 some, credits being traded between parties. And that's a
18 good sign, that just shows that the market is beginning
19 to mature. So OPIS, the Oil Price Information Service
20 that tracks this, has just indicated that starting in
21 August they're going to start posting the LCSF credit in
22 dollars per ton, and that's really a good sign, they're
23 going to have a transition where they're still doing it
24 in the spread between the 98 and the 90. They're also
25 then going to express it in a value per carbon point and

1 metric tons, so -- and we do expect that starting next
2 year, you will see more open trading of the metric tons,
3 and we tried to help, being parties here that have a
4 unique position, we've actually tried to help get that
5 market going and we have traded, you know, most of our
6 carbon credit goes out in the value per gallon, but we've
7 also participated in some buying and selling of the
8 metric tons.

9 COMMISSIONER PETERMAN: Thank you. And I know
10 the price, cents per gallon of Ethanol has been changing
11 over the last few months, but where is it about now? And
12 maybe Mr. Kneiss can speak to this, perhaps.

13 MR. KNEISS: You're talking about the price of
14 the Ethanol, itself?

15 COMMISSIONER PETERMAN: Uh-huh.

16 MR. KNEISS: Yeah. West Coast Ethanol, this is
17 the futures trading yesterday for pump month was \$2.76 a
18 gallon.

19 COMMISSIONER PETERMAN: Okay.

20 MR. KNEISS: Ethanol Midwest, \$2.61. I did not
21 write down the Gulf Coast number, sorry.

22 COMMISSIONER PETERMAN: No, well, thank you. I
23 was just trying to get a sense of, again, relative value
24 credits versus Ethanol price and such.

25 MR. KNEISS: On the Federal level, too, which is

1 relevant, the RINs price, the Renewable Identification
2 Number under the RFS Program for Ethanol is about right
3 now just trading about almost five cents per gallon,
4 which is about five times more than traditional, so...

5 COMMISSIONER PETERMAN: So that would be the kind
6 of -- in our thinking about our LCFS credit, so about
7 five cents per gallon? Okay. Great. Well, any final
8 comments from our panelists?

9 MR. KNEISS: Well, good luck.

10 COMMISSIONER PETERMAN: Thank you, and thank you
11 for your work in this area and we welcome any follow-up
12 comments you have for us. Thank you.

13 MR. RILLERA: Thank you, John. Thank you,
14 Michelle. And can we have the third panel come up to the
15 table here? And Jim McKinney is going to moderate this
16 section.

17 MR. MCKINNEY: Commissioner, if it's okay with
18 you, I'd like to moderate from the table, please?

19 COMMISSIONER PETERMAN: That is perfectly fine. I
20 think we've already been sitting here an hour, so if
21 anybody wants to stand up, I'm going to stand up, and
22 stretch your legs for a minute as everyone gets settled,
23 don't hesitate. (Pause) All right, that's enough
24 stretching, okay. Mr. McKinney, the floor is all yours.

25 MR. MCKINNEY: Okay, Commissioner. It's my

1 pleasure to introduce and moderate this third panel,
2 which will focus on advanced biofuel production projects
3 in California and their linkage to the existing Ethanol
4 plant infrastructure, both production and distribution.

5 We've got two groups of people here, we actually
6 have, well, Professor Kaffka who is in a class by himself
7 from U.C. Davis, Professor of Agronomy. And we're going
8 to ask him to give an overview of the biofuels feedstock
9 potential in California. Professor Kaffka has been an
10 advisor to the AB 118 Program since its inception and has
11 advised us both on sustainability and the feasibility of
12 the wide array of alternative energy crops that might be
13 produced in California for production in advanced
14 biofuels.

15 The rest of the panel is a really nice cross-
16 section of some of our AB 118 grantees. So we have Scott
17 Janssen from EdeniQ, who recently won an award for
18 cellulosic Ethanol production. Jeff Manternach is going
19 to be representing the Mendota Advanced Bioenergy Beet
20 Cooperative, which I think is a very innovative
21 biorefinery and farmer cooperative/collective approach.
22 Brian Pellens of Great Valley Energy is doing trials on
23 sweet sorghum here in California, down in the Southern
24 San Joaquin Valley. So we have two of the three kind of
25 widely discussed alternative bioenergy crops, energy

1 beets and sweet sorghum that will be represented today.
2 And our final speaker will be Russ Teall of Biodiesel
3 Industries, whose company is doing innovative work on
4 algae-based biodiesel, and I think getting into renewable
5 diesel with the help of some DOD funding.

6 And with that, I'd like to -- I kind of mentioned
7 this to Steve earlier -- but we heard some interesting
8 discussion this morning about grain sorghum, about
9 something called CX1, which I had never heard of or even
10 seen a photograph of before, and then California-based
11 corn for fuel production, so I've asked him if he could
12 integrate some observations or comments on each of those
13 feedstocks, into his discussion and presentation. So,
14 Steve.

15 DR. KAFFKA: Thanks, Jim. When the topic of
16 participating in this panel first came up, there was some
17 thought about responding to the questions that were in
18 the -- and I did make some notes about that, but being
19 here today, what I'd like to do is, besides responding
20 directly to Jim's request, is perhaps provide a few
21 general comments.

22 I work in the Department of Plant Science at U.C.
23 Davis, I'm an Agronomist, so I've worked on crop
24 production. We also, with contracts from the Energy
25 Commission, have developed some economic models that

1 allow us to estimate the potential for crop adoption and
2 crop residue use in California throughout the state
3 which, as many of you know, California is a highly
4 diverse, highly varied state in terms of its agriculture
5 production.

6 The first thing I'd like to say is actually
7 quoting someone whom I respect very highly, David
8 Zilberman from U.C. Berkeley, and he points out -- and I
9 think correctly -- that humans have a great talent for
10 agriculture. And if you need any evidence, all you have
11 to do is look around at California for the human talent
12 for agriculture. So the question is, should agriculture,
13 since we're talking primarily about agricultural
14 feedstocks today, should agriculture contribute to the
15 transformation of our energy economy? Should it have a
16 role? And I can see no reason why it shouldn't
17 contribute in some way, at some level, to the solutions
18 that we all feel are important with respect to climate
19 change and the transformation of our energy economy. So
20 that's the first thing I'd like to say.

21 And I also want to say that I think that the AB
22 118 Program is really a great program. Energy is so
23 fundamental to our economy and it's so deeply embedded in
24 every aspect of our life, and we're so dependent on the
25 traditional forms of energy that one of the best, if not

1 the best, strategy for promoting a conversion at the
2 lowest economic cost is to invest in new technology, some
3 of which are going to be risky, some of which may not
4 work, but new technology provides a pathway for finding
5 the least cost path to meeting carbon intensity goals, as
6 well as to maintain the wealth of our society and its
7 general well being. So I want to commend the AB 118
8 Program for having been a tool for investing in diverse
9 kinds of projects in feedstock sources, and I hope that
10 it can continue.

11 What we've heard here today are two -- what we're
12 going to hear this afternoon is a second approach to the
13 problem of providing fuels for California's market that
14 are lower carbon intensity -- biofuels in this case.
15 This morning, we heard some really excellent
16 presentations I think from people in the industry that
17 addressed many of the questions that you had in your
18 initial solicitation; that's one reason I don't think I
19 need to do that.

20 What they're doing is starting with essentially
21 the ready-to-hand technology, which is corn Ethanol,
22 which has been around for quite a while, and gradually
23 and steadily making substantive improvements in the
24 efficiency to that. Now there's been some suggestions
25 about the use of alternative feedstocks and that's

1 perfectly feasible, for example, grain sorghum is another
2 crop, another grain that ferments perfectly well. The
3 Europeans use small grains, they use particularly surplus
4 wheat. So you'll find wheat, corn and sugar syrup
5 systems in Europe where they'll use the feedstock that is
6 most profitable at any given point in time for their
7 system. So all of that is perfectly well, and then the
8 efficiency, both in the traditional process and the
9 addition of things like anaerobic digestion of biogas and
10 corn oil removal, and improvement of fermentation of the
11 fiber fractions, and then the addition of cellulosic
12 processes that make use of existing capital structures
13 that corn-based Ethanol plant, that pathway of improving
14 on the existing and the fuel first generation technology
15 is a sound one.

16 The folks that are here on this last panel, for
17 the most part, represent another strategy, which is
18 looking at different pathways for the creation of
19 Ethanol, or other kinds of biofuels, from non- -- if you
20 will, from different feedstocks.

21 Now, I mentioned earlier today that we use these
22 terms about "first generation," "second generation," and
23 so on, "third generation," "advanced cellulosic," those
24 terms can be of use, but, in fact, they also can be
25 misleading. So a first generation technology that we

1 heard of this morning is advancing quite well into kind
2 of higher and higher levels of carbon intensity. At the
3 same time, other folks are learning about how to do
4 cellulosic fermentation and in some cases that might be
5 linked to the so-called first generation. There's folks
6 on this panel that are going to be talking about crops
7 and crop residues that are so-called second generation
8 crops, but -- and they're going to be talking about
9 combining various kinds of feedstocks.

10 So in some ways, the terminology can get in our
11 way. What we're really looking for are prudent and
12 efficient and viable feedstock transformation technology
13 combinations irrespective of whatever generation they
14 are. They might involve first generation crops with
15 second generation crops with third generation processes.
16 So I think it's important not to be too rigid in our
17 thinking about them. I know that people who have to
18 comply with the RFS2 have a statutory requirement to use
19 advance -- to create advanced biofuels and cellulosic
20 biofuels, but the Low Carbon Fuel Standard is a superior
21 regulatory mechanism in my view because it basically
22 looks only at carbon intensity which is a much more, in
23 my view, rationale way to approach that problem.

24 So the last thing I'd like to say by way of an
25 introduction, before I just particularly talk about corn,

1 and perhaps grain sorghum, is that with respect to
2 biomass, all kinds of biomass, what is the best biomass
3 to use in a particular place is often a very local issue.
4 So corn grows wonderfully in Iowa and Nebraska, not this
5 year so well because of the 60-year drought, but on
6 average it's a remarkable -- it's highly adapted there,
7 so it makes sense to grow corn and soybeans because
8 they're always -- incidentally, they're always related,
9 it's almost a 1:1 relationship. Part of the demand for
10 Cornland is also a demand for soybeans, it's not an easy
11 thing to separate out. But in other places, another kind
12 of feedstock is going to be optimal and, in California,
13 we divide the state up into 45 different regions, each
14 with its own kind of most representative cropping system
15 and its own prices, and so for a company that wants to
16 get a feedstock, it's going to be available at one price
17 in one area and available at a different price in another
18 area, or not available at all. So, in other words, the
19 solutions to providing biofuels from the feedstocks that
20 are available in California are local -- I like to say
21 all biomass is local, just like politics. So it's
22 important to keep that in mind and think that there will
23 be places where one system works really well, and other
24 places where a different system entirely is the best, or
25 most optimum. So we have, actually at the service of the

1 Energy Commission, that modeling capacity which we are
2 also providing to some others that are interested in it.

3 COMMISSIONER PETERMAN: Dr. Kaffka, can I
4 interrupt and ask you a clarifying question?

5 DR. KAFFKA: Yes.

6 COMMISSIONER PETERMAN: So you mentioned that --
7 I guess it's your research U.C. Davis has, or is it the
8 State, has these 45 agricultural zones, would that be
9 appropriate to say?

10 DR. KAFFKA: Yes.

11 COMMISSIONER PETERMAN: Are these based on the
12 economic potential -- is the economic potential included?
13 Or is it just about the characteristics of the
14 environment that would make it suitable for one crop or
15 another?

16 DR. KAFFKA: Well, the way we created them is
17 because California has a regulatory program in the
18 Department of Pesticide regulation that requires growers
19 to report their pesticide use and the crop on which it is
20 used, that's resolved down to the section and there are
21 640-acre levels. So we took 10 years of that data which
22 is a massive dataset and asked a statistical program, a
23 cluster analysis to say where do crops occur most
24 commonly together? And it's sorted out, you could make
25 some choices, but to about 45 different areas. So in

1 some places, you grow almost only rice, right? We found
2 out in looking at that and doing some economic analysis
3 that upper San Joaquin Valley is probably the most
4 easiest place to adopt -- for beets to enter back into
5 crop rotations. We found in other places Canola might be
6 more readily adopted. And not that any one crop couldn't
7 be grown in all those places, it's just that the price
8 point at which it would be adopted would be lower in one
9 place or be more suitable for the rotations in others.

10 COMMISSIONER PETERMAN: Thank you. So it looks
11 like the current state of agriculture and considering
12 what are the opportunities for alternative crops that
13 could be used for transportation --

14 DR. KAFFKA: You're going to be hearing about
15 some of them today, so I might comment after everybody
16 speaks, but I think there are some very good
17 opportunities here on the panel.

18 COMMISSIONER PETERMAN: Fair enough.

19 DR. KAFFKA: So, really, last thing about corn
20 and grain sorghum, and in the context of this cropping
21 system analysis, farmers here, particularly here in
22 California, do not grow just one crop. They don't even
23 -- and when you substitute one crop, it can have an
24 effect not just on the crop you think you're substituting
25 for, but it can actually influence the planting decisions

1 of several crops at the same time, so it's not
2 necessarily intuitively obvious, all the changes -- all
3 the things that might come or go. Farmers will adopt a
4 crop because it makes sense to them; it allows them to
5 use their water, their machinery, their land uses more
6 optimally with that crop as part of their whole cropping
7 system than without it. So that would be true for corn,
8 or for grain sorghum in this case.

9 So if the price for grain sorghum is such that it
10 is sufficient to allow grain sorghum to displace some
11 other lower value crop and it fits in kind of the time of
12 year, and the machinery structure, and the other
13 constraints that the farmer operates on, they'll grow
14 that and they'll sell it to whoever wants it. The same
15 is true for corn.

16 We grow almost 800,000 acres, or slightly more,
17 of corn in California, incidentally. The vast majority
18 of it, however, is grown as silage for dairy cows which
19 is the main feed source for most dairy rations. So
20 that's pretty robust use, about 150,000 to 200,000 acres
21 of it is grown for grain and has always more or less been
22 a part of cropping systems, particularly in the
23 Sacramento Valley and the Delta. The Delta is a big corn
24 area.

25 So grain sorghum does grow well here, it's

1 probably somewhat more water and nitrogen use efficient,
2 but it tends to have lower yields than corn, so the
3 question of adoption is really an economic one. And the
4 benefit of that crop to the fuel producers is an outcome
5 of the lifecycle assessment, given the inputs used to
6 that crop, the displacement of what crops are displaced,
7 and so on.

8 Just one last word about corn, I think it gets a
9 bad name, but I think it's actually one of the wonders of
10 the world, and I think it's like the Great Pyramids; corn
11 has increased in yield over the last century 800 percent.
12 So you have in places like North Dakota under dry farm
13 conditions what used to be even just a decade or so ago,
14 an 80 bushel an acre yield, you now have 120. The
15 rainfall hasn't changed, the resource use is more
16 efficient and better, but we're seeing and we have seen
17 the steady increase in productivity and resource use
18 efficiency over time. It's a bedrock of human well being
19 and it's really in and of itself a remarkable crop. So
20 we really need it and it's used for multiple purposes,
21 not just for food, it goes to animal feed, it goes to
22 some industrial products, it goes to high fructose corn
23 syrup for soda, you know, I don't consider soda food, you
24 might, you can make up your mind if you think that's in
25 competition with food use, maybe we should drink less

1 soda and put more Ethanol in our cars.

2 So it's a good crop and it has its place, it's
3 not the only thing we should use. I think the investment
4 in Ethanol has been overall positive for both the
5 American agricultural economy and world agriculture. We
6 have a tight year right now. We have a 60-year drought
7 and so what works on average doesn't necessarily work in
8 those extreme years, and so there will be evolution of
9 public policy and response to that appropriately. But I
10 don't know if that answers your question about those two
11 crops, Chairman.

12 MR. MCKINNEY: Yeah, thank you, Steve. I guess
13 one follow-up on in-state corn production. What are the
14 water requirements for that? And then, secondly, would
15 there be any carbon intensity value benefit for in-state
16 corn versus out-of-state corn production, whether it's,
17 you know, direct emissions or indirect land use
18 emissions?

19 DR. KAFFKA: Well, you know, the carbon intensity
20 of a corn crop will vary by where it's produced and by
21 the year, so in a good rainfall year it's hard to beat
22 Iowa, for example; in a bad rainfall year, you know,
23 there will be a lot of energy invested in planting and
24 growing that crop and harvesting it for a much lower
25 return, so the carbon intensity of the crop this year is

1 going to be not so good. Corn grows really well in
2 California. We have yields on average that are like
3 Iowa's. Our crops are irrigated, it takes three to four-
4 acre feet of irrigation per year for corn, it grows from
5 the Sacramento Valley down to the Bakersfield area, so
6 across a wide range of environments and it would have
7 slightly different yields and resource use efficiencies.

8 The Delta is kind of a special place. In the
9 Delta, you have some of the highest yields in the state,
10 you have surplus water in the Delta if you know the
11 agriculture there, it's -- because the farmland is below
12 the level of the water in the levees, you have to pump
13 the water out, so you just don't pump as much out when
14 you have your corn there. But the other side of it that
15 is touch on the Delta is that you have these organic
16 soils and so you have a lot of carbon loss from farming
17 annual crops. So it's hard to give kind of, in my view,
18 a uniform answer to that. I suppose that yields in
19 California and corn crops in California can be grown with
20 a comparable efficiency, certainly, to crops in Nebraska
21 under irrigation and probably, in some cases, crops under
22 rain fed conditions because the yields are higher under
23 irrigation and therefore your resource use efficiency is
24 greater than in some limited dry farmed areas.

25 COMMISSIONER PETERMAN: Dr. Kaffka, you've

1 provided parts of answers to the question I'm about to
2 ask, but I want to make sure that I fully understand the
3 following. So you've talked about California being a
4 good place to grow corn, right, and so the statistics
5 that come to mind to me are that we're meeting only four
6 percent of our state ethanol demand with in-state Ethanol
7 production, and I believe that Ethanol is primarily
8 produced with out-of-state corn. And so I just want to
9 get a sense of the corn that is grown in California,
10 where is it going? What would even need to change within
11 that market alone to be providing more of our in-state
12 Ethanol with California-based corn?

13 DR. KAFFKA: I think most of the grain corn, non-
14 silage corn, is going into the feed market. We don't eat
15 -- or maybe there's some small amount that makes tortilla
16 chips, but we don't eat in our diet very much cornmeal;
17 some culture eat more of it than others. So it's in the
18 grain market and if the Ethanol producers want it, they
19 have to pay whatever price it is currently selling for.
20 I don't see California becoming a major corn supplier to
21 Ethanol, ethanol industries in the state. I think you'll
22 hear some examples of alternative crop feedstocks
23 discussed in this panel. I think the optimum outcome or
24 mixture will be a diverse set of feedstocks that fit for
25 various different reasons well into farming systems in

1 different parts of the state. Does that answer your
2 question?

3 COMMISSIONER PETERMAN: It does, thank you. And
4 you touched upon the point that the carbon intensity of
5 corn-based Ethanol can improve -- well, let me say that
6 the carbon intensity is a mix of both the feedstock and
7 the process, in short, and we've also heard examples
8 about how some plants that are using corn-based feedstock
9 are improving in their carbon intensity. I was wondering
10 if you have a sense of kind of the extreme -- the maximum
11 potential of reduction in carbon intensity, or what would
12 be even a theoretically possible carbon intensity that
13 corn-based Ethanol could reach? Something around those
14 lines, I think you get where I'm trying to go here,
15 hopefully.

16 DR. KAFFKA: I do. Well, there's kind of an
17 ongoing increase in efficiency on fertilizer use and
18 water use. As you have a better hybrid, you get a better
19 response to all those inputs, so they're used more
20 efficiently. The same is true for tillage, which is like
21 a fixed expense; you better your yield, the less the
22 tillage is a percentage of the total input use. So
23 that's the generic process of increasing efficiency. But
24 I'm going to answer this in a slightly different way.
25 Right now, we account for -- in the Low Carbon Fuel

1 Standard, we say that corn oil extracted from this
2 Ethanol process has no carbon footprint; so, in other
3 words, the corn from which the oil was a part, all the
4 carbon intensity is on the Ethanol, none of it is on the
5 production side, or the growing side is on the oil.
6 That, to me, is not a rational basis for distributing
7 carbon impact. If you were to think of -- if you use the
8 stalk, the stover of the corn, most of the carbon input
9 on those pathways is associated with the grain only.
10 Well, really, it's the whole plant. So if you were to
11 distribute the carbon costs to all -- proportionately to
12 all products, then that in fact would lower -- would
13 improve the carbon intensity of the Ethanol if the whole
14 plant is in fact used, or a larger fraction of it is
15 used. So that's partly an accounting issue. So there
16 will be a slow and steady increase in the resource use
17 efficiency of crop production over time with corn, there
18 has been like a one to two percent increase steadily over
19 the last generation or more, and we can expect that to
20 occur on that side.

21 We've heard examples this morning of how the
22 process of converting the grain to Ethanol has been
23 improving and will continue to improve, and I think there
24 is also some possibility of improving it under
25 accounting. Last is the indirect land use change cost

1 and I will just give you my opinion, which is that I
2 don't think that the values that are used are that
3 defensible, I think they're too high, and that's another
4 way in which the carbon intensity might be reformed --
5 but that's opening a can of worms, it's probably not
6 appropriate for this.

7 COMMISSIONER PETERMAN: Well, we're talking about
8 it all now, so I think it's perfectly fine to bring up --
9 I did have a question, but it's escaped my mind, maybe it
10 will come to me after we hear from the other panelists.
11 Thank you.

12 MR. MCKINNEY: Yeah, thank you, Commissioner and
13 Professor Kaffka. So we'll go to our other panelists
14 now. So these are AB 118 Grantees working with various
15 alternative process technologies and feedstocks here in
16 California. And as you make your remarks, I'd just like
17 to remind you, we're very interested in the status of
18 your project, we're very interested in what you see as
19 the major milestones to get your project or product to
20 commercial scale production in California. And we're
21 also interested in the linkages to the California
22 biorefinery industry as it currently stands, and the role
23 of the LCFS and RFS2 credits and policies as a revenue
24 stream in securing financing for your product.

25 So with that, we're going to hear first from

1 Scott Janssen of EdeniQ.

2 MR. JANSSEN: Thank you, Jim. Dr. Kaffka, that
3 was great. It's a tough act to follow. I'll just say
4 I'm actually in violent agreement with what Dr. Kaffka
5 has said and what our first panelists have said, you
6 know, at EdeniQ, we're a technology company, we've got
7 about \$60 million of private capital invested in us,
8 we're totally focused on partnering with Ethanol plants,
9 biorefineries, to help migrate them and become more
10 efficient. We have a couple different processes, one is
11 a salinator which allows the corn to be more efficiently
12 converted over into Ethanol, it gets two to four percent
13 left, we're working in hundreds of millions of gallons of
14 corn Ethanol plants today with that technology. We also
15 have a corn oil extraction technology, again, doing the
16 same thing, extracting the value, the corn oil out of
17 those plants and, again, working in hundreds of millions
18 of gallons, we're already commercial scale with both of
19 those technologies.

20 Chairman Weisenmiller actually talked about our
21 second product, which is called a pathway -- we literally
22 have a product called a "pathway product," and what that
23 is doing is it's taking the corn shell, the corn fiber,
24 and converting that into Ethanol. Right now, that passes
25 right through the traditional corn Ethanol process, so

1 that is considered by the EPA to be considered cellulosic
2 or advanced fuels, again, taking that corn kernel and
3 getting every bit of value you can out of that. And
4 that's a product that we offer to Ethanol plants or
5 biorefiners today.

6 And the final piece of that, and this has been
7 our core -- kind of our company was founded on this -- we
8 call it a Corn to Cellulosic Migration Project, and
9 that's what we received AB 118 funds for. We just had a
10 big ribbon cutting down there a month ago. Deputy Perez
11 was down there, actually Dr. Kaffka was down there, all
12 three of our California Ethanol plants were down there
13 for that to see our ribbon cutting for that plant. At
14 that plant which is, again, you guys are helping us fund
15 the operations of that, we're taking corn stover, we're
16 taking citrus tree clippings, wood chips, wood waste from
17 California, we're taking switch grasses, and we're
18 putting them through a process. The plant is fully
19 commissioned and we're starting to run experiments right
20 now, we're running one to two tons -- we can run up to
21 two tons a day, we're running about half a ton to a ton a
22 day through there, converting that fully into an ethanol
23 product. It's a fully integrated biorefinery. We're
24 gathering all of the metrics to understand the economies
25 producing Ethanol fuels out of these agricultural waste

CALIFORNIA REPORTING, LLC

52 Longwood Drive, San Rafael, California 94901 (415) 457-4417

1 products. With this grant, we'll be able to dial in and
2 to specifically focus on California sourced agricultural
3 waste products, which is a great thing. And
4 additionally, under our grant program and which was part
5 of our business plan, as well, is to work with each of
6 the Ethanol plants -- California-based Ethanol plants --
7 to understand how technologies can continue as they
8 alluded to earlier, to migrate them and to be as
9 efficient as possible. One of our strategies is to take
10 this biorefinery that we have and then bolt it right on,
11 so to be able to take the locally available agricultural
12 waste products, whether that's -- you know, I've got
13 friends who say, "Hey, I've got pomegranate waste, you
14 know, hundreds of thousands of tons of it, what do you
15 want to do with that?" I'm like, "Great, we should be
16 able to take that and do something with that." You know,
17 corn stalks, corn stover is not as prevalent in
18 California because of the silage, but certainly with the
19 Midwestern plants, you look at all those Midwestern
20 plants are right around all that great corn, which all
21 that stover just ends up in the fields, so that stover is
22 a great application for those plants.

23 So, again, we're in violent agreement. The first
24 comments, you know, with these technologies we can reduce
25 greenhouse gases, we're creating jobs in the San Joaquin

1 Valley, we're located right along the 99 Corridor right
2 with all these California Ethanol plants, we're right in
3 Visalia. We have added 45 jobs, we're up to 90 people
4 right now working in Visalia. Investment is needed, you
5 know, we're lucky enough, we've garnered some good
6 private and now some good public capital behind our
7 company and one of the things that we're doing is we're
8 offering a lease program to the plants to allow them to
9 be able to, with very little money down, or no money
10 down, be able to start implementing these technologies.
11 However, a key component of that is that we need to make
12 sure that those plants are viable and that they have the
13 support of their ownership groups, their communities, the
14 states that they're in, and that they're viable entities
15 so that we can feel good about our capital to work to
16 help these plants integrate and migrate to other sources
17 of feedstock.

18 So, again, stability with the CEPIP Program is
19 crucial here in California. Definitely, stability with
20 RFS2 is crucial because one of our targets right now, if
21 you want to talk a little bit about milestones and
22 economics, right now at our integrated biorefinery, we're
23 targeting to be able to produce from agricultural waste
24 to Ethanol at below \$3.00 a gallon, which we think is
25 reasonably competitive, certainly it becomes a lot more

1 competitive and we're able to build these bolt-on
2 technologies with our plant partners if we get those RINs
3 credits from RFS2. If that's stable, that certainly
4 helps to get investments to help us and these Ethanol
5 producers to be able to migrate to next generation
6 technologies.

7 The technology is very close, I mean, we've got
8 definitely some fierce competitors out there with some
9 different technologies and all of us are doing a great
10 job, but RFS2 is key support, financial support, and of
11 good working Ethanol plants are willing to innovate, are
12 key partners for us.

13 COMMISSIONER PETERMAN: So, thank you. I have a
14 few -- I'm trying to get a sense of current relative
15 scale of these different types of products, and so I'll
16 tell you what I'm looking for and have you walk me
17 through, that would be great. So you have the recent
18 project, the ribbon cutting, which is more demonstration?

19 MR. JANSSEN: It's -- if we ran at full tilt
20 boogie, it would be 50,000 gallons a year.

21 COMMISSIONER PETERMAN: Okay --

22 MR. JANSSEN: Right? But it is designed to be
23 able to run at that scale. The reason that scale is
24 important is because it's a fully integrated refinery, we
25 recycled the water, I mean, it's a fully working

1 biorefinery and that's a scale where we can perfect and
2 grab metrics so that we can grab those metrics and then
3 scale up from there. So we're under extensive economic
4 studies to understand the full economics around that, so
5 when we do scale it up for a bolt-on, say a \$10 million
6 bolt-on, we know exactly the economics around that.

7 COMMISSIONER PETERMAN: And you see scaling up to
8 be the same type of equipment, but bigger? Or are there
9 technology advances that will be needed for scaling up?

10 MR. JANSSEN: We've designed this plant with
11 scale-up absolutely in mind, we didn't put anything in
12 there that wouldn't -- couldn't commercially be scaled
13 up.

14 COMMISSIONER PETERMAN: And you also mentioned
15 you have a commercial facility, a commercial scale
16 facility?

17 MR. JANSSEN: We have equipment that is working
18 at current corn Ethanol facilities, so we work with one
19 of the fifth largest Ethanol producer, Flint Hills
20 Resources, owned by Koch Industries, we work with those
21 groups, we work with Plymouth Energy, we work with E
22 Energy Adams, and we work with another Ethanol Group I
23 can't name.

24 COMMISSIONER PETERMAN: Okay --

25 MR. JANSSEN: And those are all 50 to 100 million

1 gallon corn Ethanol plants working throughout the U.S.

2 COMMISSIONER PETERMAN: Okay, so -- oh, as
3 combined?

4 MR. JANSSEN: Four different ownership groups,
5 yeah.

6 COMMISSIONER PETERMAN: Okay, so an individual
7 plant would be about how many gallons?

8 MR. JANSSEN: Most plants are either 50 million
9 gallons or 100 million gallons, so those are basically
10 the two large varieties. There are some early stage ones
11 that were built about 20 million gallons, and those would
12 probably be the ones that you'll see a little bit of a
13 shakedown here going forward because the economies of
14 scale, they're just not as efficient as they would be.

15 COMMISSIONER PETERMAN: And those are all with
16 non-corn-based feedstock?

17 MR. JANSSEN: Those are all corn-based
18 feedstocks, so, again, we have technologies that are
19 allowing the corn Ethanol plants to be as efficient -- we
20 talked a little earlier today about the 2.74 gallons per
21 bushel, we can work with plants and get that up to the
22 2.8, 2.9 efficiencies.

23 COMMISSIONER PETERMAN: Okay. Yeah, I'm just
24 trying to get a sense of when we asked the question
25 earlier of Panel 1, what would it mean to have 50 percent

1 of your current Ethanol production be coming from non-
2 corn, and I don't have top of mind, for example, what the
3 annual production would be at the plants that were on
4 Panel 1, maybe they can throw out a number, but just
5 trying to get a sense of how do we move from 50,000
6 gallons a year to 50 percent of what that is.

7 MR. JANSSEN: Right. So, I mean, that's
8 absolutely a goal of this facility, we literally call it
9 our Corn-based to Cellulosic Migration Facility, or the
10 CCM plan, is to be able to prove out those economics now
11 as we run it with corn stover, with California-based
12 sourced wood chips, and California-based stover, and show
13 those economics, and then be able to take that data and
14 go to the California Ethanol plants, or any Ethanol
15 plants and say, "Here's what it would be like. We're
16 shooting for \$5.00 a gallon capex, so for \$50 million, 10
17 million gallons, you can do a bolt-on and all of a sudden
18 now you can start to integrate other feedstocks, these
19 non-food feedstocks into your biorefineries.

20 COMMISSIONER PETERMAN: And when do you
21 anticipate having -- being at that point where that
22 analysis is done? I know the project just started.

23 MR. JANSSEN: I mean, they're working feverishly
24 on it, you know, as we speak. So, you know, we're
25 working with the plants right now. We're working with

1 the plants right now.

2 COMMISSIONER PETERMAN: Okay, so within a couple
3 years?

4 MR. JANSSEN: No -- no, no, no, I think we're --
5 we should have this fully vetted by sometime next year.

6 COMMISSIONER PETERMAN: Okay.

7 MR. JANSSEN: Yeah, half way through next year,
8 we will be running as part of the CCM program, the
9 biorefinery was funded, co-funded by the Department of
10 Energy funds, and so we'll be doing some significant
11 runs, you know, thousand dollar commercial type runs here
12 in the second half of this year, in the first half of
13 next year, and the results to those will be proved out
14 and we should be able to show that the scale-up -- show
15 the metrics behind the scale-up early next year --

16 COMMISSIONER PETERMAN: Thank you.

17 MR. JANSSEN: -- and so hopefully get started,
18 yeah. Thank you.

19 COMMISSIONER PETERMAN: Any questions before the
20 next panelist? Thank you very much. We'll turn to our
21 next panelist.

22 MR. PELLENS: Good afternoon. I am Brian
23 Pellens. I'm with Great Valley Energy. And we were a
24 recipient of AB 118 grant funds that were rewarded in
25 2010 and we've been making steady progress up through

1 this date. So we're focusing on fractionating sweet
2 sorghum to make both biofuels and other products. And we
3 focused on sweet sorghum for a number of reasons, one is
4 that it's -- we can get a lot of biomass per acre and it
5 will re-tune, which means it grows back after it's cut.
6 That's a plant that will provide both -- well, actually
7 it will provide starch, sugar, and cellulose, so it makes
8 it a good platform when other technologies come about.
9 It's also relatively tolerant of drought and marginal
10 soils. It will grow with less water inputs than corn
11 will. It will grow well here in California primarily in
12 the Southern San Joaquin Valley, and it's an advance
13 biofuel. So --

14 COMMISSIONER PETERMAN: Sir, can I ask you to
15 pull your mic just a little bit closer?

16 MR. PELLENS: Yes.

17 COMMISSIONER PETERMAN: Great, thank you.

18 MR. PELLENS: You bet. So what we're doing is
19 we're taking sweet sorghum and we've licensed the
20 technology from a Canadian company called Tilby, and
21 we've purchased some Pile 80 equipment from them, and
22 what that equipment does is it takes the sweet sorghum
23 stalk, which is like sugarcane, and it splits it radially
24 so that we can gain access to the inner portion of that
25 plant, which we call comfit, we've got names for all

1 these different pieces of -- it's called comfith, c-o-m-
2 f-i-t-h, and there's actually if we go forward one more
3 slide, there's a picture right there. So that inner
4 portion, that comfith, has the sugar juice in it. Going
5 outward, there's part of that plant that is a woody
6 structural portion that we call comrind, and then the
7 very outer portion of that plant is dermax, that's the
8 epidermal layer, and it's got some interesting bioactive
9 compounds in its natural axis. So we can take these
10 different fractions and make them into -- in the
11 products, there's a picture of the products up on the
12 screen, there's various wood products that can be made of
13 this and there's some food grade wax up there, cosmetics,
14 and the sugar juice can go to make Ethanol or any of the
15 other biofuels that work on a sugar platform. Next
16 slide, please.

17 So what we're doing here is developing a platform
18 for a biorefinery that's based on sweet sorghum. And
19 what that does is it allows us to enter in different
20 markets that are not necessarily related, so that we have
21 more economic stability. On the next slide, you can see
22 that sweet sorghum to Ethanol is a low carbon pathway,
23 showing about an 85 percent decrease based on staff
24 calculations.

25 Now, under our grant, we've got several different

1 objectives, one is to determine the agronomics of sweet
2 sorghum in California, meaning how much would a farmer
3 charge to grow that crop for us. Another objective was
4 to develop a pilot plant and test and make various
5 products, to identify different process configurations,
6 and to perform some conceptual engineering on those
7 configurations so that we can identify what the capital
8 cost energy inputs and water inputs would be for those,
9 to conduct some product market research, all of which
10 goes into developing some pro forma economic models for
11 these different configurations, and then to explore and
12 compare the environmental impacts for all those
13 configurations.

14 So as far as the agronomics go, we're in our
15 third year of production of sweet sorghum as a purpose
16 grown crop. We've been working with the CEC and CDFA on
17 a grant with Steve Kaffka growing a crop up at Westside
18 Research Extension in Five Points. This year, we're
19 using both publicly available and proprietary varieties
20 that we've obtained from a California-based E technology
21 provider. We're in our second year of doing on farm
22 trials.

23 Last year, we planted 10 acres of sweet sorghum,
24 this year we're doing five at a private farm in Lost
25 Hills, and as Steve alluded to, we'll be leveraging their

1 extensive crop database to identify what the probable
2 pricing is going to be in California, where the best
3 places are going to be for us to locate.

4 So last year we procured -- well, yeah, there's a
5 couple of good pictures there, those aren't stock photos,
6 those are actual pictures from the growth up at Westside
7 Research Extension and you can see the seed heads of the
8 plant on the top there.

9 So last year we procured our pilot, well, most of
10 our pilot equipment for a demonstration plant from Tilby.
11 We got that equipment set up and we processed our crop to
12 produce some samples for last year; this year, we'll be
13 procuring some additional equipment so that we can drive
14 the biomass so that it can be stored more easily, we need
15 to get it down to probably below 15 percent moisture so
16 that it won't degrade, and then we'll be doing some juice
17 processing, some filtration and some concentration of
18 that sugar juice.

19 So in identifying what our process configurations
20 are, we're focusing as a midstream bioenergy company, so
21 what that means is that it's entirely possible that we
22 won't produce any consumer products, we will just be
23 producing intermediates that go to another company like,
24 for example, we're evaluating right now a bolt-on
25 business model which would use existing corn Ethanol

1 infrastructure, so we would locate right next to an
2 existing plant and provide sugar feed that would go into
3 their fermenters. And in addition to that, we will
4 provide some dry and/or pelletized biomass which would be
5 storable and transportable and could be used as an on-
6 site fuel for electricity production or for cellulosic
7 sugars for drop-in biofuels, as well.

8 So this year what we're going to do is
9 alter/filter some of that juice to see how storable it's
10 going to be and also concentrate that sugar juice to test
11 its storage characteristics at that point.

12 We short listed four experienced engineering
13 contractors to help us with our preliminary engineering,
14 we're currently evaluating scope and budget with two of
15 those firms. We expect to have that work completed this
16 year and that work is going to include developing process
17 flow diagrams, heat and mass balances, and then,
18 importantly, estimating capital and installation costs,
19 energy inputs, and staff loads for those process
20 configurations.

21 Throughout this whole process, we have also been
22 conducting product market research. If we skip forward
23 about four slides, that one right there, there's a nice
24 picture of some oriented strand board and some medium
25 density fiber board that was made with -- well, the OSB

1 was made with the comrind and the MDF was made from the
2 comfit after the juice was extracted. Now, while it is
3 possible to make construction materials out of this, we
4 don't think that now is the best time to be entering into
5 a market which is also distressed, so we've actually
6 decided that that's probably not going to be the best
7 place for us to go.

8 We've been doing some work with Colorado State
9 University on the bioactive compounds, we sent them
10 several shipments of the dermax material, the outer
11 epidermal layer, and we've got some good promising
12 results back. Basically, when compared to I guess the
13 standard antioxidants that are in like blueberries, we've
14 got about the same concentration. So there's some
15 additional work that's going on there that should be done
16 in the coming months.

17 I guess, skipping forward, so we'll be taking all
18 this information, developing the pro forma economic
19 models going forward, we have a lot of work to complete
20 through the rest of this year. And then, as far as the
21 environmental impacts, based on what comes out of the
22 inputs that are needed from Steve Kaffka's group's work
23 for growing the biomass, and then with the heat and
24 energy balances show from the preliminary engineering,
25 we'll be able to provide that data to a company that's

1 going to do a Well-to-Wheels carbon intensity value for
2 us and see where we shake out based on the different
3 process configurations that we're considering. And that
4 would take us through the major goals of the grant under
5 AB 118.

6 Going forward from there, our next phase is a 10
7 ton per hour facility, which is about 10 times what we
8 think we can get out of the equipment that we have right
9 now. That equipment, at least on the front end side from
10 the Tilby separation equipment has already been designed.
11 We have not approached anybody for investment or funding
12 on that because we're not ready yet. We need the answers
13 from this year's work to be able to provide the
14 information that somebody would need for that.

15 We do think that this facility is going to just
16 produce a sugar syrup which would go into existing
17 Ethanol infrastructure, and then we would be drying it
18 and pelletizing the comrind and then we're identifying
19 other partners that would take the bioactive compound
20 concentrate for use in making bioactive compounds.

21 Following that demonstration phase, that
22 commercial demonstration phase would be a commercial
23 plant which is about five times the size. A plant this
24 size has been designed and built in Mexico 15 years ago,
25 it's no longer in operation, but it has been done. There

1 is, of course, a difference between doing that and it was
2 also done with sugarcane, I should say, and so there is a
3 difference between doing that in Mexico with sugarcane
4 and then moving that process up here and putting together
5 a sweet sorghum crop plan and getting that biomass to a
6 new plant.

7 So with the 10 ton per hour facility, we're
8 looking at a 2014 on-line schedule, \$15 million in round
9 numbers, 50 tons per hour; we're looking at 2016, we
10 think, about \$40 million. Those are very rough
11 estimates. We'll have better data after our preliminary
12 engineering is done.

13 So there are several barriers that I can
14 identify. We've got -- there's a lot of uncertainty, I
15 would say, in the financial marketplace right now running
16 up against -- running desperately toward a fiscal cliff,
17 which I think is going to keep anybody in their right
18 mind out of investing in a project like this until that's
19 solved. We've got regulatory uncertainty with the Low
20 Carbon Fuel Standard, as well. There are a number of
21 programs -- the BCAP Program and USDA, DOE loan programs,
22 and then just some uncertainty about the existing Ethanol
23 infrastructure that we heard about today and we think
24 stands in -- will stand in the way of us moving forward
25 with this.

1 As far as the Low Carbon Fuel Standard goes, one
2 suggestion is -- and I know that this is probably out of
3 your purview, I mean, it is out of your purview, it's not
4 your program -- but with the current legal challenges,
5 the State needs to renew and affirm support of that
6 program because it's a very important driver for our
7 business model going forward, perhaps providing a bonus
8 credit structure assigned to Advanced Biofuels or
9 something like that. We need some kind of market
10 support.

11 So as far as getting the feedstock grown, BCAP
12 has been relatively successful at the Federal level and
13 I'm wondering if there might be a California-based BCAP
14 that could be directed toward purpose grown crops --

15 MR. MCKINNEY: Brian, could I ask you to
16 summarize what BCAP is for those who may not know?

17 MR. PELLENS: It's a Biomass products program,
18 it's designed to provide incentives for growing new types
19 of crops that aren't covered under Federal Insurance
20 Programs. So it's a risk mitigation type of program. I
21 think that that might be useful here. The CEC grant
22 program obviously has been instrumental to the work that
23 we're doing now. We would certainly appreciate
24 additional support going forward as we build out through
25 our commercial demonstration and the commercial plant, as

1 well.

2 And then, I guess, you know, there is some
3 uncertainty on the existing corn plants right now, I
4 mean, our business models, the most promising ones, rely
5 on that infrastructure and the continued operation of
6 those facilities. For example, when we look at our
7 commercial plant, the scales that we're talking about are
8 maybe four or five million gallons a year. If we had to
9 build a standalone, our own Ethanol production capacity
10 at five million gallons a year, it would be extremely
11 expensive on a dollars per gallon year basis. It might
12 be five times what most of the capacity was built at,
13 which as we heard today was about \$2.00 a gallon of
14 capacity, so we might be looking at \$10.00 a gallon and
15 we just -- that business model won't work. So we need to
16 be able to fit into the existing infrastructure to add
17 onto it.

18 And again, I know that indirect land use change
19 isn't necessarily in your purview either, but I believe
20 that the numbers that are associated with that -- and I
21 liked Steve's comments -- that they're not only probably
22 not right, but they're just not based in science which,
23 you know, if we look back, if we did a backwards look
24 using the models, I'm sure that we wouldn't see the land
25 use change as predicted by the model because it just

1 didn't -- I don't think that will happen.

2 And then, lastly, we need to support incentives
3 for infrastructure investments, for example, at the
4 existing Ethanol plants there's going to be changes that
5 are going to be necessary on site to make accommodations
6 for using our feedstock. And I've got a couple more
7 slides on blend wall, but I think that in the interest of
8 time, we covered that pretty well this morning.

9 COMMISSIONER PETERMAN: Thank you. That was good
10 to get a nice walk-through of your business model and
11 your expectations around your plant scaling going
12 forward.

13 Just one follow-up question. You've noted that
14 the business models assume long term that the existing
15 corn Ethanol infrastructure will be present, and just
16 looking at the milestones you have in here for your
17 project and, for example, I'm looking at the commercial
18 plant slide, at what point would you be wanting to co-
19 locate with the existing infrastructure? Is that when
20 you get to that commercial plant size? Is that 2016?
21 Are you thinking that's 2014? Just trying to get a sense
22 of when some of those partnerships will be more
23 established.

24 MR. PELLENS: Yeah, we would need those
25 partnerships for the commercial demonstration plant.

1 COMMISSIONER PETERMAN: Okay, so the 2014 one?

2 MR. PELLENS: Yes.

3 COMMISSIONER PETERMAN: Okay. Thank you. I
4 don't have any additional questions. Chairman?

5 CHAIRMAN WEISENMILLER: Yeah, I was going to make
6 the observation, as you were going through the background
7 saying that, obviously, all the investors are scared off
8 given the uncertainties, and you get back to -- I think
9 Mark Ferron made the observation of the PUC that he
10 didn't want the PUC to be the dumb money in transactions
11 and, you know, I think obviously we have loans out
12 already. I guess the only obvious question is what is
13 the security we have associated with those loans, but
14 obviously we need to be creative and typically what I've
15 seen in the past, when you have a financially challenged
16 entity going back to a bank saying, "I need another
17 loan," they start looking at -- or the bond extended --
18 they start looking at the security they have and trying
19 to figure out how to get better security in terms of
20 liens, or wherever their positions are in the cash
21 waterfall so that, if worse comes to worse, they haven't
22 just sent more good money after that initial investment,
23 so certainly in terms of thinking about stuff, we have to
24 protect the state's interest, so it comes back to what
25 sort of liens, what sort of security, and obviously you

1 have some assets there, but people have to be thinking
2 seriously about what is really going to take care of the
3 state's interest if we were to go any further because,
4 again, we just can't be the dumb money on the block.

5 COMMISSIONER PETERMAN: And I think, Chairman,
6 your question, your comment generally, is for all of
7 those within the industry and so I think as more of a
8 follow-up question, perhaps we'll get to it today,
9 otherwise in future communication, about what additional
10 security could be made in terms of government
11 investments. And also, my guess is -- I'm not recalling
12 exactly how the loan terms worked under CEPIP -- but I
13 don't think we're getting a particularly high interest on
14 these loans, for example, Larry, do you want to speak to
15 that?

16 MR. RILLERA: There is no interest as this is not
17 a loan transaction, per se.

18 COMMISSIONER PETERMAN: But, Chairman, I think
19 your points are well taken that, in terms of being in the
20 position of being a loan entity, or being asked to be so,
21 loan or grant, we do have some concerns around long term
22 being paid back, and also, yeah, getting what return, if
23 any, on the State's investment.

24 CHAIRMAN WEISENMILLER: Yeah. Basically we
25 certainly have a fiduciary duty to make sure that, if

1 there are assets there, you know, that in return for that
2 "loan" (quote unquote), that we have our fair share of
3 those assets if anything goes wrong. And obviously we
4 won't have that conversation today in public, but
5 certainly people will need to be thinking about, you
6 know, again, it is a quid pro quo.

7 COMMISSIONER PETERMAN: Do you have any other
8 questions for this panelist -- Brian? Thank you very
9 much.

10 MR. PELLENS: Thank you.

11 COMMISSIONER PETERMAN: Mr. Mendota? I was going
12 to say last, but not least, but I think we have someone
13 else on the phone, so, the Bronze position.

14 MR. MANTERNACH: Hi. Good afternoon. My name is
15 Jeff Manternach and I am the CFO of the IR1 Group. We
16 are the lead developer on the Mendota Bioenergy Project
17 and I'm speaking here today on their behalf, so I do want
18 to extend a thank you to the Commissioners and the CEC
19 staff for inviting us here today and to share our
20 progress. I will keep my comments brief, I've got a
21 dozen or so slides we'll move through quickly, so we can
22 just get on to the Q&A session. Next slide, please.

23 A quick overview of what I'll cover today, I'll
24 give you a summary of Mendota Bioenergy and the current
25 project, as well as the planned commercial plant

1 highlights and a bit of a timeline to get there; I'll
2 talk a little bit about the feedstock, itself, and it's
3 place in California, and then benchmark it against some
4 of the competition, and I'm happy to take any questions
5 after that. Next slide, please.

6 So Mendota Bioenergy, first and foremost, is a
7 grower-led project. The Spreckels Sugar Plant in Mendota
8 closed its doors in 2008, which marked an end to over 100
9 years of sugar production in California's Central Valley.
10 The cooperative was formed as a result of that closure to
11 explore either reopening that facility, or continuing to
12 grow beets and doing something other than table sugar
13 production, and as a result of that, Mendota Bioenergy
14 was formed in 2011 to pursue an integrated biorefinery.
15 Next slide, please.

16 As I mentioned, we are a grant recipient under AB
17 118, and work is progressing. We are doing technical
18 work on the planned integrative biorefinery, which
19 includes Ethanol, anaerobic digester, gasifier, and waste
20 water treatment plants. That technical work consists of
21 process flow diagrams, process and instrumentation
22 diagrams -- excuse me, piping and instrumentation
23 diagram, mass energy balances, and the like. U.C. Davis
24 has been conducting a good deal of lab scale work, one of
25 Dr. Kaffka's colleagues, Dr. Ray Hong Jiang has been

1 heading up that work, and also Davis has been performing
2 some lifecycle analysis work for the group under Dr.
3 Kendall. There's been, as you might imagine, a fair
4 amount of feedstock planting, itself that is being headed
5 up by both Fresno State and the Cooperative members.
6 We've been looking into agricultural best management
7 practices and sustainability certification methods for
8 the ultimate commercial crop, that's being headed up by
9 SureHarvest.

10 IR1 has been looking at finished product
11 contracting, financing, and financial modeling. We are
12 approximately 16 months into a two-year grant period. We
13 think we've made great achievements on the technical
14 research and feedstock areas, really significant
15 developments, and we are now moving into pilot-scale
16 testing and detailed technical work, and detailed
17 modeling, and so just -- in terms of overall scale, we
18 have been conducting lab scale work for, oh, over the
19 past year or so, we are moving into a 30 to 40 ton pilot
20 scale, that's tons -- wet tons of energy beets. If run
21 annually, that scale would be about 15,000 gallons per
22 year.

23 The next stage of our overall project development
24 timeline is approximately a two-year demonstration scale
25 where we're planning a 10,000 ton demonstration which

1 would work out on an annual basis to about a million
2 gallon per year scale, and that's a demo scale facility.
3 And then, overlapping that would be the planning and
4 construction for a commercial scale facility which we
5 would see opening its doors in the fall of 2016. Next
6 slide, please.

7 The commercial plant would require approximately
8 35,000 acres of energy beets, which would be about 1.4
9 million wet tons. Combined with that, we have a
10 digester, an anaerobic digester, that would take a
11 portion of the spent stillage from that Ethanol
12 production facility, as well as about 5,000 dry tons of
13 locally grown wheatgrass and local food waste, and
14 produce process heat, and approximately 40 percent of the
15 energy for that facility, we would have a biomass
16 gasifier taking in about 55,000 dry tons of woody biomass
17 material from the local area.

18 Just to round out the products, we are looking at
19 a commercial scale at 40 million gallons of advanced
20 biofuel Ethanol. We have been investigating the
21 potential to use that sugar platform and convert that on
22 a catalytic basis into drop-in jet and diesel fuels,
23 that's still in preliminary stages, that's not part of
24 the currently funded project. The anaerobic digester
25 would be producing approximately the equivalent of

1 700,000 gallons per year of diesel, which is ballpark in
2 the range of what our own feedstock logistics and
3 transportation fleet would require for the commercial
4 facility -- I mentioned the biomass gasifier -- and,
5 finally, wastewater treatment plant, there's an awful lot
6 of water inbound and, so, we use as many of the
7 beneficial solid materials as we possibly can, and then
8 we clean up the balance, and we turn it as beneficial
9 water into the agricultural irrigation system. Next
10 slide, please.

11 Just looking at energy beets as a feedstock,
12 California, as Dr. Kaffka has mentioned, is really a
13 remarkable place for agriculture. We believe we have the
14 capability to conduct a year-round harvest which is
15 novel, and that would be about a 4,000 tons per day feed
16 into the commercial facility.

17 There is a long history of growing sugar beets,
18 or energy beets, in the Valley. As recently as 2008, the
19 Spreckels Sugar Plant was pulling in over 15,000 acres,
20 and the Valley has historically supported north of
21 100,000 acres of sugar beet production. We look at it as
22 a highly productive crop given the current yields that
23 we're seeing, both crop yields and in-plant yields, we
24 see a total system yield of about 1,200 gallons per acre.
25 And finally, we are working on a grower payment system

1 that is not based on traditional dollars per pound of
2 sugar, but rather dollars per -- or Btus per acre, and
3 including a carbon intensity payment to incentivize lower
4 carbon production. Next slide, please.

5 Just looking at several of the crops that are
6 currently used to produce first gen and second gen
7 Ethanol -- and this is supplied by the Brazilian Sugar
8 Growing Association -- we see Brazilian sugarcane on the
9 high end of the commercially produced feedstocks, but we
10 see that energy beets certainly have the potential to far
11 outstrip that in terms of total productivity in gallons
12 per acre. Next slide, please.

13 California has a very unique agricultural
14 environment and there is constant competition for crop
15 land, particularly in the Central Valley where farmers
16 can rotate in and out of grow crops, and so one of the
17 things that we've seen over the past 30 years is, while
18 overall acreage of sugar beets in the United States has
19 remained relatively stable, acreage in California has
20 certainly declined and is now down to just supporting one
21 plant in the Imperial Valley. Next slide.

22 It's a shame because, as a bioenergy crop, we
23 think it has a very bright future as the graph here
24 displays, and apologies to the attendees who have it in
25 the black and white, it shows up much better in color

1 here on the slides, but California has long led the
2 nation in terms of productivity and yield, tons per acre,
3 and that's part of how we get to our 1,200 plus gallons
4 per acre. Next slide, please.

5 In terms of the competitive landscape, we believe
6 that we can be cost competitive with Midwest corn plant
7 facilities when corn is running \$5.00 - \$6.00 a bushel.
8 We are targeting approximately \$2.00 to \$2.25 per gallon
9 cost of production at this point. We can achieve stable
10 feedstock pricing through available long term contracts,
11 that's awfully important when we come around to
12 discussing financing. We are a grower-led group and we
13 can contract with not only our growers, but an expanded
14 network of growers that used to grow for the sugar plants
15 on a long term stable feedstock pricing basis.

16 Finally, we are exploring potential off-take
17 contracts and the conversion to drop-in fuels -- and when
18 I say "off-take," that's not just "will you please take
19 my fuel and handle it," we think anyone can -- or a lot
20 of parties can do that -- it's, rather, a fixed or
21 feedstock linked price for the intermediate to long term
22 that's important.

23 We think that we've got, among many of the next
24 gen fuel producers, a relatively low technology risk
25 process technology. We are employed simple fermentation

1 that has been done for thousands of years and, in fact,
2 there are commercial facilities in Europe that currently
3 use beet juice as one of their co-feedstocks in
4 commercial scale facilities.

5 Finally, I think that we have room for
6 improvement on our 1,200 gallons per acre, both on the
7 field, Mendota Bioenergy is currently with some of its
8 partners conducting a six-acre drip irrigation test that
9 we would expect would bump those yields up pretty
10 substantially, and we also think that there's continued
11 room for improvement inside the plant, on the plant
12 field.

13 We do believe that we've got a low carbon fuel
14 and some initial modeling by U.C. Davis has pegged our
15 integrated biorefinery system at carbon intensity of less
16 than 20, which we think is fairly compelling. Next
17 slide, please.

18 When we look at how that stacks up against
19 current producers, as well as Brazilian sugarcane
20 producers, we think that the positions of Mendota
21 Bioenergy to be certainly among the lowest carbon
22 intensity fuels in the marketplace, and that's awfully
23 important to our business model and, so, would reiterate
24 the prior comments that we believe that continued support
25 for the Low Carbon Fuel Standard is important. Next

1 slide, please.

2 Just to wrap up my comments today, upon
3 reflecting on this morning's discussion from the existing
4 producers, and also in response to Mr. McKinney's request
5 to please address the linkage to those existing
6 producers, I think it's important for the perspective
7 next generation producers to recognize the significant
8 contributions of the first generation to the success of
9 the next generation. The first generation industry has
10 built an asset base somewhere -- direct asset base,
11 concrete and steel, in the ground, producing in those 200
12 plus plants, somewhere north of \$20 billion of concrete
13 and steel in the ground. They have a trained direct
14 workforce of more than 10,000 people, they have spawned
15 thousands of specialty suppliers and consultants with
16 expertise in enzymes and yeast, and plenty of other
17 important inputs into these plants. There is
18 transportation and blending infrastructure by trucking
19 firms, terminals like Kinder-Morgan and Nu Star that have
20 all invested significant amounts of capital, all to take
21 in these fuels and drop it into the existing system.
22 There is a vehicle base out there to use Ethanol at 10
23 percent going to 15 percent, and a base of E85 vehicles.
24 There are retail stations that know how to handle Ethanol
25 as a fuel, and we as prospective next generation

1 producers get to stand on the shoulders of the industry
2 that the first generation has really developed, so it's
3 important to recognize that as prospective producers.

4 COMMISSIONER PETERMAN: Thank you. I don't have
5 any additional questions.

6 MR. MCKINNEY: So do we have Russ Teall available
7 on the WebEx?

8 MR. TEALL: Yes. Can you hear me?

9 COMMISSIONER PETERMAN: Yes, Mr. Teall, welcome.
10 And thank you for your patience. How are you today?

11 MR. TEALL: Oh, my pleasure. Do you have the
12 Powerpoint up?

13 COMMISSIONER PETERMAN: Momentarily -- oh, here
14 we go.

15 MR. TEALL: Perfect. Well, it is a pleasure to
16 be here today addressing you via WebEx, especially, as
17 compared to an 800 mile round trip drive from the Naval
18 Base from Ventura County. Our facility is located down
19 there at the National Environmental Test Site, and it
20 began with a Cooperative Research Development Agreement
21 with the Navy Facilities Engineering Service Center back
22 in 2002. The objective has been to produce modular
23 deployable multi-feedstock biofuel and bioenergy
24 platforms. Next slide, please.

25 Basically, we design, build, own and operate

1 sustainable biorefineries that produce renewable fuel and
2 power. We built five commercial facilities since 1999.
3 Today I'll be going over two of the CEC grants we've had
4 the good fortune of receiving, both under AB 118 and the
5 PIER Program, and then I'll also address the demand,
6 commercialization and financing challenges that we face
7 in the industry. Next slide, please.

8 So the ultimate objective of the CEC grants and
9 for us as a company, because we feel that it has
10 tremendous value add, is to reduce the carbon intensity
11 of the fuel that we are producing to below 20 CI by using
12 low indirect land use feedstocks and on-site renewable
13 combined heat and power. If you look at the different
14 pathways of development of the Low Carbon Fuel Standard,
15 some of the largest penalties in terms of CI are in terms
16 of feedstocks and the use of fossil fuel. So what we've
17 done is try to address these issues. We're working with
18 Dr. Kaffka on some of these areas and with Dr. Kristova
19 from U.C. Davis on others.

20 One of the approaches is a purely unique approach
21 we've developed with the Navy on agriculture, using mixed
22 aquatic species and also looking at feedstocks that can
23 be grown in California on saline soils, on dry land,
24 cropping, and inter-cropping with orchards, you know, so
25 that we're not displacing land that would otherwise be

1 used for food, and that includes feedstocks such as
2 castor, brassica's and, of course, our own use, the fryer
3 oil collection program. The technology we use for the
4 production is derived over five years of experience and
5 is enhanced through the use of programming that was
6 developed with the U.S. Navy for centralized command and
7 control, so that we can do real time monitoring and
8 automation of smaller facilities in the field, so that
9 distributed production becomes possible and that those
10 distributed production facilities are also not only
11 producing their own power, but producing excess power
12 that can then be net metered onto the grid. This is
13 accomplished through the use of anaerobic digestion of
14 the glycerin byproducts of biodiesel production and the
15 gasification of inedible oilseed solids, so, for example,
16 when we harvest and process castor seeds, which have 50
17 percent or more oil content, we end up with about 50
18 percent inedible solids. Those can be gasified in a set
19 to produce heat and power on-site.

20 And then, finally, the use of solar co-
21 generation, which has about an 80 percent efficiency, we
22 use to capture both the heat and the electrical potential
23 from the area.

24 Our project at Naval Base Ventura County is an
25 example of what we would like to do. The next phase,

1 which would be on the farm as opposed to on the base in
2 an urban area, is slated for Red Rock Ranch and that
3 project is co-located with the Mendota Energy Beet or
4 Sugar Beet Project that you just heard Jeff describe.

5 The potential there for co-locating Ethanol and
6 biodiesel plants has a great deal of synergies. We
7 actually will be producing more heat and power than we
8 consume, that heat and power can be forwarded to the
9 Ethanol facilities, they go through an energy cascade,
10 and we can use their lower grade heat. So there's a
11 great deal of efficiencies that could be provided between
12 the two.

13 In the production of biodiesel, there's about an
14 11 percent consumption required chemically of alcohol
15 products, and that can be either in the form of Methanol,
16 Ethanol, Butanol, Isopropyl, and so by being able to use
17 Ethanol that's produced on-site, that again improves the
18 carbon intensity of the fuel because we're using an
19 alcohol that's produced from a renewable biomass, as
20 opposed to Methanol which is produced typically from
21 natural gas or fossil resources.

22 Finally, the output of the biodiesel plant can be
23 used in the farm equipment and the transportation
24 equipment that's used for harvesting and transporting not
25 only the biodiesel crops and finished product, but the

1 Ethanol crops and products, as well. Next slide, please.

2 This is at the -- I had the privilege of serving
3 on the Low Carbon Fuel Standard Advisory Panel that
4 Michelle Buffington spoke about, along with Richard
5 Corey, and one of the questions was, you know, looking at
6 the requirements as they ramp up over a period of time to
7 2020, how many gallons of fuel are we talking about? I
8 mean, how many gallons of any particular pathway fuel is
9 going to be required to meet the Low Carbon Fuel Standard
10 objectives? Can you still hear me?

11 COMMISSIONER PETERMAN: Yes.

12 MR. TEALL: Great. The interference suddenly
13 went down, which is great. Looking at this graph to the
14 left, going out to 2020, you can see the different
15 pathways that have been defined by CARB, and they have
16 different carbon intensities. If you take as an
17 objective that your carbon intensity is going to be 20 or
18 less, and that could be biodiesel or renewable diesel, or
19 Ethanol, if you just focus on the carbon intensity
20 credits that are going to be needed for diesel production
21 and consumption in California, that amounts to about 540
22 million gallons of ultra low carbon intensity diesel that
23 are going to be needed by the year 2020.

24 A similar model could be generated for Ethanol
25 and other gasoline equivalents as compared to CARBOB to

1 see what the objective is, how many gallons of that low
2 carbon intensity fuel are going to be needed. Just on
3 the diesel side, that means 54 facilities at 10 million
4 gallons a year, 27 facilities at 20, etc. And just
5 looking at the inventory of in-state capacity, it seems
6 efficient.

7 And so feedstock and production are going to be
8 the keys to meeting the Low Carbon Fuel Standard and the
9 ability to have centralized command and control structure
10 enables smaller regionally distributed facilities that
11 could be co-located with Ethanol facilities, just as an
12 example, with the goal ultimately for it to be
13 competitive with fossil fuels. Next slide, please.

14 So in terms of commercialization and finance,
15 when you're trying to be competitive in the commodities
16 market, there's only three elements that really matter,
17 and that's price, quality and service, and if you can
18 compete on that basis, you're commodity is going to be
19 consumed, and if not, then it won't be. And so when
20 we're looking at the endgame here, the supports that are
21 provided by government need to be temporary, they need to
22 have a transition to achieving this goal. But when
23 you're looking at the financial markets, they've got
24 certain requirements, as well, and that's that it be a
25 validated technology and that the feedstock supply

1 agreements are in place, and the product off-take
2 contracts show profitability. And so, you know, we call
3 that basically you've got the three-legged stool which is
4 feedstock, production and sales, and those three elements
5 have to be operating simultaneously, in balance with one
6 another in order to have a successful business. So new
7 facilities and feedstocks need to be developed, it's a
8 feedstock first strategy and, with the help of what I
9 call leveraged financial support by government, you can
10 address all three legs of the stool, so you've got
11 continued research and development under a program like
12 AB 118, and some of the DOE contracts that are coming up
13 looking at new feedstocks, new technology, etc. Product
14 demand, of course, is essential and that can either be
15 poultry by consumption from struggling agencies, which
16 I'll talk about in a minute, or government mandates, or
17 production incentives like the RFS2 and the RIMs, which
18 help subsidize the cost of fuel by mandating the purchase
19 of credits in the private sector. And then, finally,
20 capital guarantees, that's probably better trades as a
21 capital enhancement, there are lots of different
22 examples, investor revenue bonds, you know, there could
23 be assistance, you know, meeting the legal and regulatory
24 hurdles in order to qualify. In the IRB market, it would
25 be outright loans, it would be guarantees, and I would

1 look at the CEC money as not being dumb money, but as
2 being smart, you know, developed for us to not have a
3 secured loan, but in terms of making an assessment as to
4 the viability of the technology. The CEC, as opposed to
5 the venture capitalists, have literally hundreds of very
6 smart people that are dedicating themselves to finding
7 out about technologies and exploring all the different
8 avenues and providing grants to provide more information,
9 so I think if the CEC -- the smart money should be
10 following your lead and I think, in terms of the grants
11 that have been provided so far and looking at a crawl,
12 walk, run strategy, that's being done pretty well.

13 Conventional models should be encouraged that
14 include investment by all members of the value chain,
15 this is a vertical integration concept where farmers,
16 technology providers, distributors, consumers, are
17 jointly involved in the ownership and development of the
18 facilities, similar to what the Mendota Energy Beet
19 Cooperative is doing, but expanding it through the entire
20 value chain. That way, there's a vested interest in the
21 entire vertically integrated process.

22 Finally, I would like to just mention that the
23 California Department of Government Services is
24 soliciting input right now about an aggregated government
25 purchase contract for advanced biofuels which are defined

1 as having a carbon intensity of less than 24, that could
2 potentially be hundreds of thousands of gallons of
3 purchases which would help drive that first leg of the
4 three-legged stool. And that concludes my remarks.

5 COMMISSIONER PETERMAN: Russ, thank you. Thank
6 you for all the collaboration you've been doing with the
7 Energy Commission on the biofuels and just renewable
8 space, generally. Chairman, do you have any questions
9 for Russ, or comments?

10 CHAIRMAN WEISENMILLER: No, actually, again, I
11 had the opportunity to meet with Russ at the Navy event
12 we had and actually met his wife and daughter there. And
13 certainly a pretty impressive project, you know, I think
14 Senator Pavley is waiting for the next step in the trip
15 down there, but anyway...

16 COMMISSIONER PETERMAN: Thank you. In the
17 interest of time, I don't have any additional questions
18 for this panel. Staff, do you have any final questions
19 for this panel? Okay, let's turn to audience comment.
20 Does anyone in the audience want to make a comment? And
21 if so, come to the podium. Please.

22 MR. KOEHLER: My name is Tom Koehler and today
23 I'm representing the California Advanced Energy
24 Coalition, as you've heard from some of our members. A
25 couple points I want to make, one is thank you for the

1 opportunity to have this dialogue. The existing
2 companies that are on the ground today and the companies
3 that have been at this panel are the companies that are
4 working to fulfill the expectations of Governor Brown and
5 AB 32, and a Low Carbon Fuel Standard. We are working to
6 make those programs successful, so that was the number
7 one comment.

8 Secondly, I wanted to clarify, Mr. Chairman, the
9 CEPIP Program is not a loan program, it's part of the AB
10 118 grant program. But unlike the other grant programs,
11 it actually has a pay-back mechanism and, arguably, it
12 could be defined as one of the smartest investments in
13 the AB 118 because you only -- the money is only received
14 if product is produced. So I just wanted to clarify
15 that.

16 COMMISSIONER PETERMAN: Thank you. Any other
17 comments from the audience? Let's turn to the phone
18 lines. Anyone on the phone line like to make a comment?

19 MR. SHEARS: Yes, this is John Shears. Can you
20 hear me?

21 COMMISSIONER PETERMAN: Yes, John. Please
22 identify yourself and your organization.

23 MR. SHEARS: Sure, great, and for the transcript.
24 This is John Shears with the Center for Energy Efficiency
25 and Renewable Technologies. I just wanted to revisit --

1 it was raised in Gordon's presentation this morning, you
2 know, given the issue of E15 and the potential for it to
3 afford some flexibility on LCFS compliance as the program
4 hits the mid-term, you know, as someone who participated
5 in the development of the predictive model, which was
6 utilized -- CARB utilizes it as part of developing the
7 inventories for the major emission sources in the states
8 and there was a lot of background research that went into
9 developing the emissions inventories that go into the
10 predictive model for the vehicle fleet when California
11 migrated from E5.7 to E10. To go from E10 to E15, it
12 will take minimum two to three years and I'm suspecting
13 that Michelle, or Richard, or anybody who is in the room
14 from CARB who could comment further, my understanding is
15 it would take two to three years to update the predictive
16 model so that CARB could understand what the impacts of
17 E15 would be on the emissions inventories throughout the
18 state. That's assuming that we're just looking at the
19 vehicle fleet. There's still some outstanding work that
20 has to be done on the off-road emissions, which might
21 require, then, an update to go from E10 to E15, it might
22 take actually even longer than the last update to the
23 predictive model. So I just wanted to sort of highlight
24 that fact because it's very important given especially
25 that, on June 28th, CARB along with the South Coast and

1 the San Joaquin Air Districts released their Clean Air
2 Vision for the state and, given the challenges that the
3 South Coast and the San Joaquin Air Districts are facing
4 in meeting their Federal Clean Air targets. So just
5 wanted to highlight that that's moving from E10 to E15,
6 if California is going to do that, we probably need to
7 get working on that right now in terms of figuring out
8 how to work that in, and how to mitigate any potential
9 emissions impacts that would be associated with moving to
10 E15 and the flexibility for LCFS compliance that could
11 result from that move. Thanks.

12 COMMISSIONER PETERMAN: Thank you. I'd also note
13 that Mr. Shears is a member of our advisory committee,
14 which is about 20-25 persons who meet multiple times a
15 year to give us feedback on the investment plan and that
16 group is composed of a variety of stakeholders from both
17 industry, different technologies, as well as state
18 agencies, environmental groups, and other interested
19 stakeholders. And so I appreciate you being on the line
20 and listening to this forum.

21 MR. SHEARS: I also just want to offer my
22 compliments on today's workshop. I think this has been a
23 substantial -- some good and substantial discussions
24 today and will lead to even further substantial
25 discussions going forward, so kudos to the Energy

1 Commission for today's workshop.

2 COMMISSIONER PETERMAN: Thank you, John. Any
3 other comments on the line?

4 MR. RUBENSTEIN: Hi. Do you hear me? This is
5 Dave Rubenstein.

6 COMMISSIONER PETERMAN: Can you say your name
7 slower, please?

8 MR. RUBENSTEIN: Hi. David Rubenstein from
9 California Ethanol and Power.

10 COMMISSIONER PETERMAN: Okay, please, go ahead.
11 You're a little bit --

12 MR. RUBENSTEIN: First off, Tim Olson, the
13 Commissioners, thank you for having this hearing. Sorry
14 we couldn't be there in person to join in. A couple --
15 there's just a couple points if I could just kind of the
16 docket, one is we really need -- and by the way,
17 California Ethanol and Power, we just submitted our
18 permit applications to --

19 COMMISSIONER PETERMAN: Sir, can I ask you to
20 slow down just a little bit? You sound -- you're coming
21 across very fast and I want to make sure we're capturing
22 all of this. Please go ahead again.

23 MR. RUBENSTEIN: Absolutely. Yeah, we just filed
24 our permit applications to start working on the first
25 sugarcane and sweet sorghum to Ethanol facility in

1 California that will also be producing electricity and
2 biogas. A couple of things that we're finding that the
3 Energy Commission could assist us, along with other
4 plants like ours, is to help us with the sales tax.
5 We're kind of running into headwind with the Governor's
6 Office and the Treasurer's Office about sales tax on
7 equipment that is going to be used to -- to be included
8 in the facility that we're going to build. And what we'd
9 like to do, and we heard it in the previous conversation,
10 is not to let something like the Solendra deal stop the
11 State helping firms like ours.

12 One other thing I also heard was with ARB talking
13 about having to really analyze the equipment, the
14 pipeline, things like that, and it would just make sense
15 that they would just piggyback on the work that the EPA
16 has done at this point, perhaps cutting down some of the
17 timeline of the state going from a ten percent to a 15
18 percent blend.

19 COMMISSIONER PETERMAN: Thank you, sir. Is that
20 all your comments?

21 MR. RUBENSTEIN: Just one more thing if you don't
22 mind.

23 COMMISSIONER PETERMAN: Please, go ahead.

24 MR. RUBENSTEIN: And as I heard the Commissioner
25 mention before about investment in companies, in our

1 case, you know, we have an application for AB 118 right
2 now and we don't think that we're going to have any
3 problem getting financing for the project itself, and I
4 think where the Energy Commission could really assist is
5 just helping the development stage, the most at risk
6 stage of getting the financing in place, where firms like
7 ours could then go out and access the capital markets,
8 which we've been able to do at this point, just helping
9 out with that development stage funding. So if you could
10 keep that in mind, we would greatly appreciate that.

11 COMMISSIONER PETERMAN: Thank you. Any other
12 comments on the line? Any final comments in the room?
13 Dr. Kaffka?

14 DR. KAFFKA: I thought this was a great day, as
15 well. I wanted just to reiterate what we heard this
16 afternoon and, to some degree, earlier in the day, is the
17 capacity, once you have facilities in place, to make
18 novel combinations and uses of a diverse stream of
19 materials, some of which are purpose produced and some of
20 which are residues, some of which might not even be
21 obvious in the initial even concept of a process. And I
22 think the notion of an integrated biorefinery, to have a
23 facility in place will create, I believe, feedstock flows
24 and uses that we can't always foresee initially. So
25 that's one of the things that I heard this afternoon and

1 throughout the day, and I just wanted to reiterate that
2 that's an important thing to keep in mind when we think
3 about future projects.

4 COMMISSIONER PETERMAN: Thank you. Anyone else?

5 MR. RILLERA: This is Larry Rillera. I just want
6 to iterate and encourage participants today that the
7 docket to submit written comments is open until August
8 17th, and please check the public meeting notice for the
9 address and specifics.

10 COMMISSIONER PETERMAN: Thank you. There has
11 been a lot of information provided today and so I'm going
12 to keep my comments for now limited because I'm looking
13 forward to seeing anything else that people submit to the
14 docket. That being said, a tremendous amount of
15 information has already been provided. I'm sure I'll
16 have more extensive comments going forward as we ponder
17 what we've heard, and if we make any choices or changes
18 in decisions. But first, here is my set of limited
19 comments, we'll see how limited you think they are.

20 Thank you everyone for participating, this has
21 been an excellent dialogue and forum, and the dialogue
22 has not just been for dialogue sake, and I'll speak to
23 that in a second. In the relatively short time that I've
24 been at the Commission, from what I can recall, this and
25 in the forum we had jointly with the Department of

1 Agriculture last summer on food and fuel issues, really
2 it's a biofuels, both of these forums were unique in
3 that, for no other fuel or technology have we pursued
4 having a special workshop and forum to more fully discuss
5 the issues. As you probably are aware in our Investment
6 Plan, we cover I think something like 15 different
7 product categories, and oftentimes the need and the
8 future projections for these areas and these industries
9 are covered in our AB 118 stakeholder workshops and
10 discussions.

11 But considering the amount of outreach we got
12 from the industry on this issue, as well as frankly the
13 complicated nature of this area in that it intersects
14 significantly with other economic sectors in the state,
15 particularly agriculture, we've though it -- and I think
16 it has been -- worthwhile to fully discuss some of these
17 issues more. A number of the challenges that have been
18 raised today, as I noted in the beginning, although real,
19 are not within the purview per se of the AB 118 program,
20 or the Energy Commission to address. That being said, I
21 think it's our responsibility as a State agency, as we
22 see some of these issues to arise, to bring them to light
23 and make sure that all the parties that need to be
24 thinking about these issues are. And we will follow-up
25 with sister agencies, both at a State and Federal level

1 who are not present here today, regarding what we've
2 heard at this workshop, after the transcript is
3 transcribed.

4 Clearly, there are a couple challenges, and some
5 of the challenges that we'll be wrestling with are
6 timing, as well as limited funding. We've heard a lot
7 here about timing in terms of expectations around future
8 demand for Ethanol, timing around how to transition
9 existing -- or utilize existing infrastructure to produce
10 more advanced biofuels, as well as some uncertainty
11 around the timing of potential private investment. This
12 program, AB 118 program, it sunsets the current
13 legislation at the end of 2015, January 1, 2016. And the
14 way that this program works, we do an Investment Plan
15 every year, and every year we have to justify in the
16 Investment Plan our expenditures and, as I noted, we have
17 an Advisory Committee which represents a diversity of
18 perspectives and, so, each year we take up this issue,
19 each year we need to evaluate where the State is going.
20 So first and foremost, I'll say I hope you all will be in
21 support of reauthorization of the 118 program because
22 there is tremendous need and, if anything, no matter
23 what, we're not going to have enough funding to fund all
24 the good projects out there, and I think in the first set
25 of solicitations which combine two years, about \$200

1 million. there was \$1.2 billion in applications for
2 funding, and those are people who actually applied, and
3 lots of good projects didn't get funded. And so I can
4 tell you, if you come to those advisory committee
5 meetings, you have parties requesting upwards of \$30
6 million annually for a particular fuel, or a particular
7 technology, and again, we're trying to work within our
8 confines to figure out what to support and how.

9 We also want to make sure that the money the
10 State invests can actually leverage or result in some
11 fruitful developments, you know, as much as -- we don't
12 want a situation where, even with State investment,
13 companies are not viable, that won't be good long term
14 for those companies and for the State choosing to invest,
15 and so those are again some of the considerations that we
16 have.

17 I had, and I still have, concern about funding
18 CEPIP in its current structure, especially considering
19 the narrowing crush spread. As some parties have
20 acknowledged, it was put in place initially to address a
21 rough patch; based on what we've heard about expectations
22 around corn prices and the Ethanol market, that rough
23 patch seems like it could go on for quite a long time,
24 and expand in size. And, again, we want to be careful
25 about putting a band aid on a much bigger wound. That

1 being said, I want to ask you in your follow-up comments
2 that you provide to remember that the program, the 118
3 program, is focused on funding products and sustainable
4 industries, and bringing certain products to market. And
5 I ask you to think creatively about really where the
6 needs are in this area, you know, how can we take
7 advantage of existing infrastructure to promote advanced
8 biofuels, and if there are other incentive structures
9 that folks recommend to be able to do that. The majority
10 of funding in AB 118 is done through a competitive
11 solicitation; this program, the CEPIP Program, as it is
12 currently structured, is not that way. So anything we
13 continue to do to think about how to make our funding
14 available in a more competitive, transparent manner,
15 those ideas are also welcomed.

16 I will also acknowledge that the existing CEPIP
17 plants are fulfilling and working to fulfill their
18 obligations under that program, which still persists for
19 the next few years in terms of improving plant
20 efficiency, and we encourage that, and we want to
21 encourage that.

22 You know, again, the 118 program has articulated
23 and engaged in providing support for advanced biofuels.
24 It's great to hear from the last panel about some of that
25 work and also to hear from you about what's the next

1 step, you know, what does it take to connect you to
2 existing infrastructure. So there will be a few
3 questions we'll have to consider here at the Commission.

4 I mentioned in the beginning that this is not
5 dialogue for dialogue sake. In the time we were working
6 on our last Investment Plan, particularly towards the end
7 of it and when we adopted the plan, real concerns were
8 raised by industry about the effect that the Energy
9 Commission not funding for a second year, CEPIP, would
10 have on the industry. And so when we adopted the plan,
11 because we wanted to move forward, we made the commitment
12 to have this dialogue so we could talk about really
13 what's the need now. We are in the process of starting
14 to fund projects through our 2012-2013 Investment Plan,
15 and if there is any additional funding that would go to
16 address some of the issues we've raised today, that's
17 something we will need to decide soon so that all the
18 parties who participated in the program will know what
19 available funds there are. So we look forward to your
20 comments, I'll be working with staff to understand what
21 options there are, and we'll be following back up,
22 whether it's through comments at a business meeting, or
23 in our next 118 committee meeting which will happen
24 sometime soon in the fall because we need to work on the
25 '13-'14 Investment Plan, and we'll be following up with

1 really what my recommendations are in this area, and
2 where the Commission is leaning towards.

3 So again, thank you all for participating and,
4 again, I don't think it's easy to come in here with your
5 competitors, and so I appreciate that the Ethanol
6 industry, that the parties have put together their ideas
7 and have worked collaboratively, even while trying to
8 individually succeed. Chairman, any questions or
9 comments?

10 CHAIRMAN WEISENMILLER: Thank you, just a few; I
11 think you've done a very good job of framing the issues
12 for people.

13 First, I really encourage everyone to look at the
14 staff slides and, in your written comments, if you have
15 specific areas of disagreement with those, please please
16 please put them in your written comments.

17 And again, I think in terms of just to make sure
18 one thing is on the record, there is some confusion, the
19 Commission has a staff, it has individual Commissioners,
20 and it has a Commission, we only speak -- the Commission
21 only speaks when it's adopted by at least three of us and
22 that's in the Investment Plan, so in terms of any
23 allusions to contracts or other things, again, unless the
24 three or more Commissioners vote for it, it's not any
25 sort of commitment, let's get serious.

1 But having said that, you know, we certainly
2 understand that we need alternative fuels and we all have
3 our vision of where we want to get to. The issue we're
4 struggling with, I'll confess, I got a pretty heated
5 email from one of the key legislative staff asking why I
6 was doing this workshop and why I was wasting my time
7 even listening to people on, you know, corn-based
8 Ethanol, so you know, we really have given you a hearing,
9 but, you know, I'm not trying to discourage you from
10 being Pollyannaish about the legislative reactions there,
11 but realize that you have a real -- this is a very
12 strongly felt tradeoff between Ethanol and fuel, you
13 know, I've heard your conversation and your very cogent
14 remarks, but again, certainly we get a lot of feedback on
15 that and so, again, I think talking about legislative
16 support, you need to be pretty realistic that you have
17 some heavy lifts there.

18 I think in terms of, you know, trying to deal
19 with realities of where we are and stuff, I remember a
20 number of years ago I was looking at energy projects, in
21 general, in terms of how they performed or didn't perform
22 and based upon expectations, and it turned out most of
23 them were really -- the performance was so heavily
24 dependent upon the macro stuff that was totally out of
25 their control; you know, that you invested in a great

1 project, biomass, or whatever, a biomass project, the
2 next thing you knew the tax law changed, OPEC pricing
3 changed, and the Forest Service came in on Spotted Owl,
4 and suddenly your project was dead in the water. Or,
5 conversely, you had it totally brilliant on that but
6 there are certainly a lot of things that will affect
7 these projects that are really outside of our control, so
8 we're trying to figure out, again, in this space, how to
9 -- what's our highest leverage? What's the most value we
10 can do with the State's limited dollars in this overall
11 competition? And unfortunately, we can't fund all of the
12 above. And, you know, certainly if we had an order of
13 magnitude more money, perhaps we could get a little bit
14 closer, but we will have to make difficult choices.

15 So, again, certainly appreciate everyone's candor
16 today and certainly looking forward to the comments
17 coming in, and I again would certainly encourage people
18 to participate in the 118 investment process. And
19 thanks.

20 COMMISSIONER PETERMAN: And just a follow-up
21 comment. It seems that, potentially to keep this
22 infrastructure available, it's not clear to me exactly
23 what costs need to be covered, it seems to me some
24 operating costs, maybe it's debt service costs, or what
25 have you, you know, getting a sense of what exactly --

