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CALIFORNIA ENERGY COMMISSION

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Joint California Agriculture)
Biofuel Forum)

**California Energy Commission and
California Department of Food and Agriculture
Joint California Agriculture Biofuel Forum**

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

1220 N STREET - AUDITORIUM

SACRAMENTO, CALIFORNIA

THURSDAY, SEPTEMBER 22, 2011

9:07 A.M.

Reported by:
Kent Odell

 **ORIGINAL**

Commissioners Present

Carla Peterman
James Boyd

Commission Staff Present:

Tim Olson
Jim Bartridge
Larry Rillera
Carol Tate

Agriculture Members Present

Karen Ross, California Department of Food and
Agriculture

Also Present (*on phone)

Panelists

Panel 1: Policy, Programs, and Investments

Dr. Glenda Humiston, United States Department of Food
Agriculture
Allan Morrison, California Department of Food and
Agriculture
Jim McKinney, California Energy Commission
Scott Nester, San Joaquin Valley Air Pollution Control
District

Panel 2: Agriculture Business Assessment

Mark Jenner, California Biomass Collaborative
Jack King, California Farm Bureau
Mike Marsh, Western United Dairymen Association
Michael Boccadoro, California Poultry Federation
Bryan Long, Foster Farms
Doug Dickson, Harris Ranch Beef Company

Panel 3: Biofuel Industry Assessment

Neil Koehler, Pacific Ethanol, LLC
Matt Hutton, Cal Poly San Luis Obispo Algal Biofuels
Brian Pellens, Great Valley Energy, LLC
David Rubenstein, California Ethanol & Power, LLC

Also present:

Mike Waugh, Air Resources Board

*Van Rainey

Mark Mayuga, Calmetha

Tim Douglas, local Delta farmer

Van Rainey, energy consultant

Dwight Stevenson, Tesoro

*Scott Miller, Wasted Fuels Conference

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P R O C E E D I N G S

SEPTEMBER 22, 2011 9:07 a.m.

SECRETARY ROSS: Good morning and thanks for being here. I'm Karen Ross. I'm Secretary of the California Department of Food and Agriculture. I'm very pleased to be able to co-chair this workshop today with my friend and colleague and great champion for biomass Jim Boyd who's Vice-Chair of the California Energy Commission. And I will ask our other panelists to introduce themselves before I make my opening remarks.

COMMISSIONER PETERMAN: Good morning. I'm Carla Peterman, Commissioner at the Energy Commission and I work with Vice-Chair Boyd on renewables and transportation. I'm excited to be here and learn more about the intersections of these subjects. Thank you.

MR. OLSON: Good morning. I'm Tim Olson. I'm an advisor to Commissioner Jim Boyd.

MR. BARTRIDGE: Good morning. I'm Jim Bartridge, advisor to Commissioner Peterman.

MR. RILLERA: And I'm Larry Rillera. I'm Staff with the California Energy Commission.

MS. ROSS: So the one thing I want to do is acknowledge and commend the leadership of Commissioner Boyd for many years of being a champion of renewables, especially with a focus on biomass. I'm not taking it

1 personal but this time you insist that you really are
2 going to retire but you do deserve a great round of
3 applause for your leadership.

4 [Applause.]

5 COMMISSIONER BOYD: You're too kind. You're
6 too kind.

7 MS. ROSS: And I also don't feel that I need
8 to make very many comments because if you read the
9 *Sacramento Bee* today you see that there is a column
10 there that really talks about the potential of biofuels
11 for California, specifically biogas and the fact that we
12 have a lot of cows in this state.

13 But the reason that I am personally very
14 interested in this topic is because I truly believe that
15 with the innovation and the capacity of California
16 agriculture with its productivity, that we are at a
17 moment in time where we can truly capture the potential
18 of biofuels on the farm through the waste stream that
19 has been generated by our processing and the byproducts
20 that come from our crops and that we can, in fact, not
21 only be food secure and feed secure, we can make a huge
22 contribution to being energy secure. That we can help
23 create jobs, that we can help create economic
24 development in some of the most depressed areas of our
25 state. That we can make a positive contribution to our

1 environment. And that it is all possible because we are
2 California and we have the diversity, we have the
3 resources, we have the innovation. I believe we have
4 the infrastructure. I know that that comes with
5 challenges and that's one of the reasons that we're here
6 today is to truly understand the challenges and better
7 identify the opportunities and create a roadmap for our
8 contribution from agriculture to helping with the
9 renewable energy portfolio of this state. So, I want to
10 thank you all for being here and I look forward to your
11 presentations. Commissioners?

12 COMMISSIONER BOYD: Thank you, Secretary Ross.
13 It's indeed a pleasure for me to be here. This has
14 been, as you stated more or less, a long steep grade
15 that we've been climbing in this state for a long, long
16 time and I'm very thankful for you and your agency for
17 this first time ever forum involving the two agencies.
18 As you and I have talked for quite some time when you
19 arrived on the scene about the nexus between agriculture
20 and energy. I'm glad we have had this opportunity to
21 initiate additional dialogue.

22 To your credit, you've already got a group
23 going and activities going on the dairy digester issue
24 as a standalone issue. But, as the more we've talked,
25 the more we've seen the need to talk about the overall

1 nexus between ag and energy; both from the standpoint of
2 the industry being a user of energy and needing supplies
3 of energy but also as an industry that has great
4 potential to contribute to the energy supply of the
5 State of California. Although we are the nation state
6 of California, we're just one of the 50 so we do have to
7 think about national policy as well.

8 I think that this is a good way for us to kick
9 off additional dialogue. The Energy Commission and the
10 Department have been collaborators for years, and for
11 almost the 10 years that I've been at the commission as
12 a Commissioner. I'm glad to see that we've taken it to
13 a new plateau and beginning to have some
14 stakeholder/public discussion together as we look at
15 this area.

16 The business to us in government, the business
17 opportunities seem significant. I hope that we can help
18 facilitate more discussion about that.

19 The last thing I'm going to mention is how
20 here finally in the 21st century, it's kind of innate to
21 say that you've crossed over a century mark, isn't it.
22 We understand better than we ever have the system
23 integration that we're dealing with. The fact that we
24 can't talk in isolation of a single topic any longer.
25 There's a great recognition as a result of, first the

1 years and years or energy security through energy
2 diversity that California has been in and out of going
3 all the way back to the first Middle East oil crisis.
4 But those go away when the price of oil goes cheap and
5 so in California it's been an environmental concern that
6 has driven an interest, in California, to alternative
7 fuels or fuels that used to be said burn cleaner than
8 gasoline and offered as a diversification.

9 Now we have the behavior of our citizens to
10 deal with, behavior of businesses and the behavior of
11 government to deal with. Government needs to
12 understand, more than it has in the past, the fact of
13 unilateral action is taken on a unilateral program, and
14 it really affects the entire system. As we sit here
15 today worrying about climate change, air quality,
16 security through energy diversity and feeding a better
17 business climate we recognize, I believe, that there are
18 many, many government policies that interact with this
19 and this is just part of the system. Everything from,
20 since we're just talking biofuels not biopower in
21 general or bioenergy, the policies of the federal
22 government with regard to renewable fuel standards, the
23 policies of California with regard to bioenergy,
24 biofuels, renewables, the low-carbon fuel standard, our
25 climate change activities and our clean fuels outlet

1 discussion - they all interact together. We have to
2 recognize that anything that we do here does involve
3 those other programs and those folks need to understand
4 that actions they take impact our various
5 constituencies. A forum like this with us working
6 together and absorbing some of the information is
7 definitely a very positive thing and I thank you for
8 your dedication to this subject in the face of all the
9 other firefight issues that arise every day that we have
10 to deal with.

11 I look forward to learning a lot, maybe a
12 leaving a little bit of education with folks, but
13 learning a lot more from the audience as to what we can
14 do in the future to address our societal needs but also
15 provide new opportunities for folks engaged in
16 agriculture. Thank you.

17 COMMISSIONER PETERMAN: Secretary Ross and
18 Commissioner Boyd have summed up the opportunities and
19 issues very well. I'll just take a moment to highlight
20 that the state agencies have been working
21 collaboratively in this space for awhile and one example
22 of that is the Bioenergy Action Plan which all the
23 agencies have participated in and lays out some of the
24 issues and opportunities. We'll be updating that. You
25 can find that just by Googling it and we look forward to

1 this workshop providing more information and guidance as
2 we move forward with that. Thanks.

3 COMMISSIONER BOYD: We are ready for our first
4 panel. And can I suggest one thing? You and I just
5 talked about the agenda a few moments ago. It indicates
6 a public comments section at the end of the day and I
7 talked to the Secretary and I think we mutually agreed
8 that I think we'd prefer to have comment at the end of
9 each panel so the subject matter is fresh and so that
10 people don't have to bottle every subject until some
11 discussion at the time. So, if we might Secretary, at
12 the end of each panel, I'll call them, we can ask for
13 any questions or comments from the audience throughout
14 the day.

15 SECRETARY ROSS: Great. So if we could have
16 our first panel Dr. Glenda Humiston who is the State
17 Director of the United States Department of Food
18 Agricultural Development Division. Allan Morrison from
19 the California Department of Food and Agriculture
20 Division of Weights and Measures. Jim McKinney from the
21 California Energy Commission and Scott Nester from the
22 San Joaquin Valley Air Quality Management District.

23 DR. HUMISTON: Good morning. Nothing like
24 being the first speaker. We'll get the glitches all
25 worked out with mine.

1 Okay. Great. I know that we're on a little
2 bit of a tight time schedule because we've shortened up
3 the day a bit so I'll try to hurry through these quickly
4 and hope that there's a few questions.

5 Basically, I just want to describe our
6 programs really quickly. For folks who aren't aware of
7 them, the Energy Title first showed up in the Farm Bill
8 in 2002 but was greatly expanded in 2008. Several new
9 programs, some of which have only been recently rolled
10 out in the last year or two due to time lag for rule
11 writing and getting programs up and running.

12 These programs are pretty broad bases, focused
13 on getting several programs going. So just to real
14 quickly show you a budget breakdown on the current USDA
15 Energy Title, as you can see, a big chunk of it is for
16 biorefinery assistance, programs for advanced biofuels
17 and then REAP, our Renewable Energy for America Program.
18 I'll give you a little bit more detail on these other
19 programs as we go along. Biomass, repowering
20 assistance, biobased markets all have smaller amount of
21 budgets there.

22 REAP is really our program for on the farm
23 efforts. This varies quite a bit, there's several
24 different aspects that I'll show you. \$255 million this
25 past year.

1 BCAP, our Biomass Crop Assistance Program,
2 which is not my agency but the Farm Service Agency, one
3 of our USDA families, is a little shaky now as far as
4 what it's doing and where it's going. We've got quite a
5 bit of funding available for research and development.
6 The Biorefinery Assistance Program is actually one that
7 we've made quite a bit of use out of here in California.

8 The Biobased Markets Program is for
9 improvements to existing programs. And then fuel
10 education, advanced biofuels - the U.S. Department of
11 Agriculture is currently working extremely closely with
12 the Navy. We have a memorandum of agreement with the
13 Navy to help them utilize 50 percent of biofuels by
14 20/20, a rather aggressive agenda on their part, and yet
15 we are well on track for that. And then repowering
16 assistance for existing ethanol plant boilers.

17 One key point that's important to make. The
18 demand for REAP has far outstripped demand available
19 funds every single year since its inception in 2003.
20 That's very true here in California. The other point
21 that I think is very important for people here in
22 California understand as we move into discussions on
23 Farm Bill and how the rules regulations on these
24 programs are written, is that the current rules are
25 written to greatly favor, as you can see, the Midwest.

1 This has a lot to do with a priority on efficiency which
2 evidently only replacing grain dryers in the Midwest
3 seems to satisfy as well as a focus on flexible fuel
4 pumps which, as you may know here in California, are
5 actually illegal. We have the ability to put in E 85
6 pumps and we have funded some of those pumps this year
7 but the true definition of a flexible fuel pump does not
8 currently meet California law. That's been a challenge.

9 For the programs that we invest in, we're
10 creating a little over 18 jobs per \$1 million invested.
11 This doesn't actually take into account the jobs created
12 in the multiplier around that as well as just moving our
13 U.S. future into a renewable energy and less dependence
14 on foreign oil.

15 To give you a sense of some of the work that
16 we're looking at right now with biomass, biofuels be it
17 ag or woody biomass, this is a slide that I put together
18 that we're using in the Northern Sierras as part of our
19 great region's industry cluster work to get folks to
20 look at the various opportunities available for biomass
21 and biofuels. Currently, the vast majority of that is
22 being utilized up there in combustion of woody biomass
23 for electricity. We're actually urging people to move
24 away from that. The cost, not to mention the
25 environmental reviews of getting transmission lines in

1 and, as much as I hate to say it, but the less than
2 stellar interest of organizations like PG&E actually
3 working with this, have made it so that we're
4 recommending to folks in woody biomass, ag waste,
5 municipal waste, to start moving to biofuels. And
6 really when you look at the overall efficiency component
7 of that, it makes more sense. Combusting this biomass
8 allows us to only harvest about 40 percent of its
9 energy. Whereas converting it into biofuels allows us
10 to harvest about 80 percent, roughly, and actually
11 produce a few byproducts that have their own value and
12 use as well. Not to mention the fact that there's just
13 a great number of jobs available as we move forward on
14 this.

15 I'm showing the woody biomass value chain here
16 but when you look at ag waste, and some of the
17 facilities we're currently working with, actually
18 putting together woody biomass, ag waste and municipal
19 waste together into the feed stock string, the potential
20 for value chain jobs is really enormous.

21 We're working with groups out there such as
22 the Dairyman who have identified this as part of their
23 overall effort as a key part of carbon reduction
24 projects and value chain opportunities and working with
25 partners such as our dairy industry here in California

1 is absolutely crucial to move all of the programs
2 forward and find efficiencies through that
3 collaboration.

4 Another really key project here in California,
5 our Agricultural Research Service which has three
6 offices here in California. The main one being in
7 Albany is cooperating—California is one of eight states
8 that has an agreement with ARS to rapidly commercialize
9 their research into their private sector. They're
10 working a partnership with the California Association
11 for Local Economic Development. Our USDA Rural
12 Development works really closely with attempting to
13 finance the activities and helping hook them up with
14 that local value chain effort. It's a really exciting
15 project and it's already producing some really great
16 work in the field.

17 Last but not least on broad overview, capital.
18 All of these projects that we're talking about require
19 capital. And even though we were able to bring in a few
20 million dollars via our programs in California last
21 year, we were able to finance grants of \$20,000 or less,
22 almost a half a million; grants over \$20,000 which was
23 predominantly three or four large ones at almost
24 \$700,000; a loan guarantee of \$1.5 million despite all
25 of that. That's only a few million dollars. That's not

1 going to build the industry that we need.

2 We've created a partnership with the Federal
3 Reserve Bank of San Francisco, a Financial Opportunities
4 Roundtable, which is looking at how to produce and
5 create better access to capital to actually harness the
6 billions of dollars that is needed in this state to
7 really create not only the biomass/biofuels industry but
8 tied into the agricultural value chain in general.

9 One project in particular that I'd like to
10 highlight though is the advanced biofuels. That's where
11 California really has the potential from some strong
12 leadership. We were able to fund over 11 producers last
13 year. One of which is kind of exciting. We have a
14 producer that is collecting the used oil from Knott's
15 Berry Farm in Disneyland quickly, nearby producing
16 biofuels that is then used by the rides in the amusement
17 park, and it's a closed system circuit. That's exactly
18 the kind of template we're trying to utilize in other
19 parts of the state as we work with woody biomass, dairy
20 producers, orchard trimmings, municipal whatever. That
21 kind of closed loop, short transport, minimum carbon
22 footprint system.

23 For the sake of time, I'm not going to go into
24 detail on these. My last two or three slides are just a
25 little bit of detail on the actual programs. This

1 information is on our website. In fact for folks who
2 aren't familiar with our programs, I truly urge you to
3 jump on our website. I've had my State Program Director
4 put together this PowerPoint with more detail, including
5 some photos of some of the projects and descriptions. I
6 like to see projects myself, it gives my imagination
7 that little nudge. But we do have the biorefinery
8 assistance, that's a big one that California has
9 utilized; advanced biofuel payment which is really
10 crucial in getting these initial projects into that
11 second stage. I have to say that the USDA programs,
12 this is the REAP Program that I mentioned early that's
13 grants and loan guarantees. This is for smaller type
14 projects, the REAP Project. We've also got renewable
15 energy systems, energy efficient improvements, energy
16 audits, renewable energy—I mean we've got several
17 programs. And some might argue that that many programs
18 is too many programs but when you really look at the
19 complexity of developing an industry, in some cases
20 almost from scratch, you really do need to focus on
21 those small little efforts, those medium sized, the
22 large, the initial stage R&D, the getting it into
23 commercialization and then the existing businesses -
24 keeping them viable and competitive.

25 So with that I'm going to close. Again, we've

1 got details on all of these programs online. I know we
2 were cutting down time today so trying to be helpful.
3 Is there a few questions that I might answer?

4 SECRETARY ROSS: Yeah. Just to go back to the
5 REAP Program, what kind of projects -because those are
6 on farm-what kind of projects are you seeing the most
7 interest in and you've been able to fund to make a
8 difference?

9 DR. HUMISTON: Well, we've got interest across
10 the board. The vast majority that we have funded tend
11 to be solar projects to replace diesel engines for
12 irrigation. That's been huge. That's probably half of
13 what we've funded. But our portfolio for the last
14 couple of years has been extremely diverse. We've
15 funded projects not only in solar but wind, geothermal,
16 algae and dairy digesters.

17 COMMISSIONER BOYD: Might I ask-and it's good
18 to see you again-we're supposed to be working more often
19 together, aren't we?

20 DR. HUMISTON: If our schedules ever find a
21 time.

22 COMMISSIONER BOYD: Right. The programs that
23 you were mentioning, do they divide between helping the
24 ag industry with its energy needs by using the newer or
25 different types of technologies that you referenced as

1 well as finding ways for the ag industry to create
2 businesses that create revenue streams and add to the
3 energy supply of the states, if not the nation? Do you
4 tend to do both in these programs?

5 DR. HUMISTON: On behalf of USDA I would say
6 yes. The Rural Development Agency of which I'm the
7 State Director focuses more on funding actual projects
8 but that's why we work so closely with our ag research
9 service which is doing that commercialization of service
10 and finding new and different ways. We work closely
11 with them on the farm and out in the forest on actual
12 projects. In fact we've got several out on the ground
13 right now that we're working closely with them to test
14 and move into commercialization.

15 COMMISSIONER BOYD: Thank you.

16 DR. HUMISTON: Thank you.

17 MR. MORRISON: Good morning. My name is Allan
18 Morrison. I am a Supervising Chemist for the Division
19 of Measurement and Standards which is part of the
20 California Department of Food and Ag. We have the
21 responsibility for fuels and lubricants sold within the
22 state.

23 As you probably know, California law requires
24 that DMS enforce fuel quality specifications. All fuels
25 sold today in California, both conventional fuels and

1 biodiesel fuels or biofuels, must meet either ASTM or
2 SAE standards. If you're not aware of what ASTM or SAE
3 are, they're consensus organizations where they bring
4 together industry, they bring together both producer-
5 people who make the fuel, distributor, pipeline
6 companies, transport companies and end-users such as
7 vehicle manufacturers and engine manufacturers along
8 with public interest groups such as government, consumer
9 organizations, universities and research laboratories.

10 The fuels that are currently legal to sell in
11 California are gasoline blended with ethanol, ethanol
12 blended with gasoline; we have diesel blended with up to
13 5 percent biodiesel and diesel blended with up to 20
14 percent biodiesel. We also have specifications on the
15 books with ethanol blended with gasoline fuels. We do
16 also have compressed natural gas and liquefied natural
17 gas specifications.

18 Any new alternative fuels that enter into the
19 market must go through the same process that the
20 conventional and existing biofuels have to ensure that
21 they do not cause harm to the engine, that there are no
22 safety issues and that the quality specifications are in
23 place so that producers can meet those and users can
24 specify those quality specifications.

25 Also, any new fuels that come onto the market,

1 as mentioned earlier, the devices to dispense those
2 fuels must be type approved by the California Department
3 Food and Ag Division Measurement Standards has a type
4 approval program. We have a staff if industry has a
5 pump or something like that, a blender, a blender that
6 they wish to use; they need to bring that to us. We'll
7 do an approval to ensure the accuracy of that device
8 because consumers, as much as wanting the fuel, also
9 would like to have an accurate delivery of the fuel.

10 Another thing that the California Department
11 of Food and Ag Division of Measurement and Standards is
12 doing is that we're working with the California Energy
13 Commission to develop specifications and standards and
14 test methods for hydrogen for use in fuel cell vehicles.
15 We're also working at developing specifications for high
16 concentration biodiesel fuels. As I mentioned before,
17 there's currently specifications up to B20. We're
18 looking at B20 up to pure biodiesel of B100.

19 California Department of Food and Ag also
20 works with sister agencies. We work with ARB very
21 closely. We work with the Energy Commission. We work
22 with the State Water Board and also the State Fire
23 Marshall's Office because the fuel has to be safe.

24 Another issue, given the complexity of this
25 whole process of coming up with a fuel standard, CBFA

1 has developed what we call a Developmental Engine Fuel
2 Variance. That allows—if a fuel has sort of gone
3 through the process, and ARB says basically it does not
4 contribute to any air pollution, there's no safety
5 issues, we can issue a variance. If there is no
6 specification that currently exists for that fuel, we
7 can issue a variance for that variance to use to develop
8 those specifications. It's not a variance for fuels
9 that are out of compliance but it's for new fuels that
10 come onto the market, such as say if pyrolysis oil came
11 on as a diesel fuel or a compression ignition fuel, we
12 could possibly issue a variance for that to be studied.

13 One of the things that traditionally biomass
14 based fuels have had to compete with conventional fuels
15 mainly on a price energy—as price energy. There were
16 some uses of biofuels for reducing the specific air
17 pollution requirements such as CO particulates but, in
18 general, most engine manufacturers have found non-fuel
19 ways around that so they basically have taken
20 traditional fuels and found ways to meet the air
21 pollutions requirements with traditional fuels.

22 The low-carbon fuel standard which is coming
23 into play sort of shifts the paradigm. Now we need to
24 have fuels that have low-carbon intensity. Biofuels are
25 no longer in competition for energy. They're in

1 competition for lowering that carbon intensity. That
2 provides a tremendous opportunity for California.
3 California agriculture is probably the most diverse in
4 the country. We're used to growing different crops. We
5 do grow the most variety of crops in the nation. We're
6 also extremely close to centers of fuel use,
7 metropolitan centers, agricultures close to San
8 Francisco, close to Los Angeles and the Central Valley.
9 These factors will assist California in producing low-
10 carbon intensity biofuels.

11 As I said before, currently, biofuels also
12 have a unique opportunity in the realm of hydrogen and
13 electricity. You can use biomass based fuels to produce
14 hydrogen and to produce electricity. That tremendously
15 reduces the carbon intensity of those fuels and furthers
16 the goals for the low-carbon fuel standard.

17 And that's pretty much what we do within
18 measurement standards. If there's any questions, I'd
19 like to answer them at this time.

20 COMMISSIONER BOYD: A quick question. You
21 mentioned the variance program that you engage in. Is
22 all the present work that's being undertaken with regard
23 to hydrogen as a fuel which is really still a large R&D
24 exercise. Is the fueling that's taking place in that
25 arena today operating under a variance?

1 MR. MORRISON: No, it's not. Hydrogen was
2 unique. The California legislation gave us the
3 authority to adopt or to adopt specifications. One of
4 our chemists, John Mough, is in the laboratory developed
5 specifications that basically went out, went to
6 industry, got what they thought was good specification
7 and we put forth those in regulation. At that time it
8 allowed hydrogen to be sold under those specifications.
9 We're waiting--before adopting say consensus standards in
10 the law, it allows us to adopt consensus standard
11 specifications once they're developed and it just so
12 happens that the day before yesterday SAE finally
13 adopted that. We'll be changing from our specifications
14 to SAE specifications which are basically our
15 specifications so we helped them develop those.

16 COMMISSIONER BOYD: Thank you.

17 SECRETARY ROSS: Thanks Allan.

18 MR. MCKINNEY: Good morning, Secretary Ross,
19 Commissioners Boyd and Peterman and members of the
20 audience. I'm Jim McKinney, Manager of the Emerging
21 Fuels and Technology Office within the Energy
22 Commission. I'm going to try to situate this
23 conversation from the Energy Commission perspective and
24 tell you what we're doing on alternative fuels and
25 emerging fuels.

1 First of all, some nation state statistics.
2 We're a big state with the ninth largest economy in the
3 world. I think when I first did this slide we were at
4 number six but we keep slipping down the chain there.
5 Transportation sector accounts for over 40 percent of
6 the greenhouse gas emissions produced in the state. We
7 have an extremely large vehicle fleet, 26.5 million cars
8 with nearly 1 million trucks. And we use a lot of fuel,
9 18.3 billion gallons total. That's 15 billion gallons
10 of gasoline, 3.3 billion gallons of diesel that's for
11 onroad and offroad applications and, I think this stat
12 is still true, the third largest fuels market in the
13 world after China and U.S. as a whole. I think, as we
14 like to say, that's not something we're proud of because
15 of the fuel efficiency of our vehicles is abysmal.

16 So ethanol supply/demand stats for you. In
17 2010 we were using 1.5 billion gallons of ethanol. That
18 was primarily as a blending agent or an oxygen aide as
19 specified by the California Air Resources Board. I
20 think most people don't appreciate that this high amount
21 of ethanol we're using has very little if anything to do
22 with a low-carbon fuel standard or the renewable fuel
23 standard number two. It's really an air quality
24 additive we're using right now.

25 Ten million gallons was consumed as E85 and

1 flex fuel vehicles, that's a small number. Under some
2 scenarios for RFS2 Compliance by, say, 2015 the amount
3 of ethanol used in the state could rise pretty
4 dramatically. I think it might taper off as well.

5 On the supply side, we have five state-of-the-
6 art plants and I think some of the people who helped
7 create those plants are here in the audience today. 250
8 million gallon per year production capacity but it's a
9 very tough market. Two of those are offline and I think
10 some of the three that are operational are struggling.

11 It's a low-carbon product. It's 18 percent
12 lower than the ethanol that we get from the Midwest but
13 there's no market mechanism in California yet to value
14 the low-carbon value of these supplies. We're looking
15 forward to LCFS kicking in and RFS2 kicking and to help
16 end cap and trade to really help build a market where
17 the very low-carbon fuels that we can produce here in
18 California.

19 There's an oversupply of ethanol at the
20 national level and we're hearing hints of shuffling
21 between U.S. producers and Brazil. It's extremely hard
22 for our instate producers to compete with the economies
23 of scale that you can get with industrial ag production
24 out of the Midwest. And, again, I think we're going to
25 talk about that more today, in this forum, and again we

1 need these carbon markets to kick in.

2 On the biodiesel side, we used 14.5 million
3 gallons last year. That's typically blended at the B5
4 level. Soy is a predominant feedstock, that's about 12
5 percent below the petroleum baseline for diesel if you
6 include the indirect land use adder.

7 We view biodiesel as a transitional fuel. We
8 think renewable diesel is where it's going to be for
9 mass consumption. Biodiesel is not a staple product.
10 There are blending issues. There are stability issues
11 in cold temperatures. And you need additional
12 infrastructure to get it in there.

13 On the production side, 16 facilities, 84.5
14 million gallon a year production capacity. We only did
15 5.5 million gallons last year but in discussions with
16 some of the producers RFS2 on the biodiesel side in
17 kicking in and we expect to see production increase.

18 The Commission has three different parts
19 programs working on the biofuels, biopower area,
20 emerging fuels and the fuels division. Our renewable
21 office, they focus on biopower and PIER, Public Interest
22 Energy Research. I'm going to talk primarily about
23 emerging fuels and AB 118.

24 This was a modest assignment from the
25 legislature, put together about \$1 billion program

1 shared between us the Air Resources Board to jumpstart
2 and transition the California fuel markets to get us
3 into a position where we're really producing and using
4 low-carbon, sustainably produced biofuels.

5 There are several policy drivers associated
6 with this. GHG reductions as specified by AB 32 I think
7 you're familiar with the stats—about 30 percent below
8 the 1990 level by 2020 and then the stretch goal 80
9 percent reduction by 2050. Petroleum reduction, instate
10 biofuels production as was referenced by our Bioenergy
11 Action Plan. We are falling well short of the goals set
12 forth in the Bioenergy Action Plan for our instate
13 production capacity.

14 The low-carbon fuel standard is kicking into
15 gear. This is the first year of implementation for that
16 and then the big gorilla out there, the Federal RFS2
17 standards with its \$36 billion renewable fuel
18 requirement by 2020.

19 We are in the fourth year of administering the
20 AB 118 program and we've allocated \$340 million to date.
21 This table summarizes expenditures or encumbrances as we
22 call them as we're good bureaucrats for the first about
23 \$200 million in the first two year funding cycles of the
24 program.

25 You can see that about a third of our total

1 investments are going to biofuels, that's biogas, diesel
2 substitutes and gasoline substitutes. I'll talk more
3 about those in a little bit. Electric drive is really,
4 really coming out into the marketplace. A lot of the
5 OEMs have really exciting vehicles. The consumer
6 response is good. A large proportion of the volts
7 available in the U.S. are being placed here in
8 California and they're getting snapped up.

9 We fund hydrogen. We fund workforce
10 development and we do program support including
11 sustainability goals and standards for instate biofuels
12 production. This program is extremely popular, I think
13 as Glenda referenced, at the federal level. The first
14 solicitations that we put out, we had \$1.2 billion in
15 funding requests, over 300 proposals. We were able to
16 fund about 65 of those at the grant level for about \$200
17 million. And I'm very happy to see some of you folks
18 that did not win awards, that you're still here and
19 working with us on these issues.

20 Going to biofuels, biogas is getting almost
21 two-thirds of our total funding so \$35.3 million with
22 more modest investments in advanced ethanol feasibility
23 and pilot applications and then diesel substitutes.

24 We've also allocated a bit of money to CEPPI,
25 the California Ethanol Producers Incentive Program, for

1 the instate biorefineries. Some money for ED5 retail
2 fueling stations and some money for biodiesel bulk
3 terminal storage.

4 In the interest of time, I'm just going to
5 have to blitz through these but we're really excited by
6 the types of projects that we're doing.

7 Glenda mentioned RFS2, they're renewable fuel
8 standards, so they think an advanced biofuel is 50-60
9 percent below the carbon baseline. Pretty much
10 everything that we fund is about 15 grams, give or take
11 5-10, that puts us 85 percent below the carbon baseline.
12 These are extremely low-carbon fuels that we can produce
13 in the state with existing feedstocks. Again, the issue
14 is price and is there a market to value the really low-
15 carbon levels of those products.

16 So for biogas, everything that we're doing
17 such as waste based feedstocks, we have ag manures, ag
18 waste, woody biomass, landfill gas, pre-landfill
19 diverted municipal solid waste and wastewater treatment
20 plant residues.

21 To highlight a couple, and I'm sorry I can't
22 acknowledge everybody here, the CR&R Project down in Los
23 Angeles Basin is the first commercial scale project for
24 pre-landfill MSW. They're going to digest that
25 anaerobically and use it to fuel their waste hauling

1 fleet. Waste Management is going to do the same thing
2 on a very large scale with landfill gas in Ventura
3 County. They're going to have an annual production of
4 3.4 million diesel gallon equivalents that can fuel a
5 fleet of 500 waste refuse trucks in the LA Basin. So
6 you get GHG benefits and criteria emission reduction
7 benefits.

8 I think a lot of people keep waiting for
9 cellulosic ethanol to deliver on its promise and as it
10 fails to deliver on its promise at an economic price,
11 biogas is coming on very strong and that's why the
12 biogas projects, frankly, outcompeted the advanced
13 ethanol projects in our solicitations. So whether it's
14 a gasification, pyrolysis or anaerobic digestion, we see
15 this as a very quick and economical way to get advanced
16 biofuels into the transportation system.

17 One company I want to highlight is G4 Insights
18 who has a cold pyrolysis gasification technology that
19 they think can tackle woody biomass. That could us in
20 very large volumes of advanced biofuels.

21 For gasoline substitutes, we're finding there
22 projects, and again these are exciting cutting edge
23 technologies and applications. Cellulosic ethanol from
24 ag waste, AE Biofuels is going to have their first pilot
25 scale plant up and running; we're helping to fund that.

1 The Mendota B Cooperative has a very
2 innovative projects. It's a combination of ethanol and
3 biogas from ag waste and sugar beets. It is a carbon
4 neutral, water positive project. It's really cutting
5 edge.

6 And I think Brian Pellens is going to speak
7 more today on sweet sorghum which we view as a very
8 promising alternative to corn for instate production.
9 It has a low water requirement and you can grow it on
10 marginal soils.

11 And then for the diesel side, three projects
12 are using ag waste streams and then two of our projects
13 are using algae as feedstocks.

14 I am not going to do justice to the PIER
15 program's excellent work on the R&D phase so AB 118
16 focuses more on pre-commercial and commercial
17 deployment. PIER, Public Interest Energy Research,
18 focuses on the R&D phase. This list of very strong
19 projects is about \$7 million, I think, all together.

20 Biomethane landfill gas for transportation
21 applications has a very important \$1 million study that
22 the Biomass Collaborative and CDFA are administering for
23 crop trials for alternative bio energy crops here in the
24 state. A lot of very exciting, cutting edge work for
25 algae, growing them either in waste ways or there's an

1 ocean application and cellulosic ag waste. I apologize
2 for not doing more justice for that.

3 I'm going to end with a couple of techie,
4 wonky charts here so bear with me please. This chart
5 shows the relative greenhouse gas carbon intensity
6 values for diesel so the far left green bar, diesel
7 about 95 grams CO2 equivalent per megajoule; that's the
8 current baseline. California reformatting gasoline is
9 about 96. So you can see LNG, we don't get a lot of GHG
10 benefits; CNG we got some modest benefits, about 20
11 percent. The action is down, again, in these waste
12 feedstocks that I've been talking about, so landfill gas
13 we're at about 82 percent below the baseline, CNG from
14 dairy digesters - 85 percent or 84 percent below the
15 baseline, biodiesel from used cooking oil, I think
16 that's probably what they're doing at Knott's Berry Farm
17 is the lowest commercially available biofuel available
18 on the market.

19 You can see soy would do a good job except the
20 indirect land use adder is high and it's significant.
21 And, again, the stuff that we're doing-RFS2, they're
22 looking for 50 or 60 percent reductions. Everything
23 that we're funding is in the 80-85 percent reduction
24 range.

25 My last wonky slide, and I apologize for this,

1 what this slide shows, and this is based on data from
2 the California Biomass Collaborative, is the technical
3 production potential for creating advanced biofuels from
4 the waste streams available in California. I'm not
5 going to read everything. If you go to the bottom right
6 rows, what that says is if you use gasoline gallon
7 equivalents, 2.5 billion gallons production potential,
8 1.75 diesel, DGE diesel projected so on the diesel side
9 that would be half of the current diesel demand in the
10 state. I said before we're using 1.5 billion gallons of
11 ethanol. This would exceed that by quite a bit.

12 Couple of things to highlight here. Landfill
13 gas, we think that's going to be cost effective pretty
14 quickly. Food waste that's easily converted and
15 anaerobic digestion, the ag residues that's a little
16 tougher hurdle with the woody biomass and the high
17 lignin content, animal manures—we've got some promising
18 technologies to get at that. And the big unknown here
19 that's kind of an outlier is forest biomass so the
20 Forest Service and Cal FIRE are estimating about 14
21 million foam dry tons a year and that's not green wood;
22 that's wood taken out of the forest to reduce fire risk.
23 So overstocking, diseased trees. It's expensive. It's
24 not economical yet and we think we have some
25 technologies in the pipeline that can economically

1 convert this.

2 And I want end this talk with Commissioner
3 Boyd's, I think, legacy, one of his legacies, with his
4 long tenure at the Energy Commission, he's been a
5 champion for this over the years and he's ensured that
6 our staff in the Fuels Division and in the Renewables
7 Office and in PIER continue to put money to converting
8 waste based feedstocks into viable, commercially
9 competitive energy products that can meet our air
10 quality standards and low-carbon standards. So that
11 concludes my presentation.

12 COMMISSIONER BOYD: Thanks, Jim.

13 SECRETARY ROSS: I have a question because we
14 were all very disappointed that we failed to get passage
15 of legislation to extend the Public Goods Charge which
16 obviously is going to have an impact, is it too early
17 for you to be able to categorize where we're going to
18 take the biggest hits for continuing this good work?

19 MR. MCKINNEY: I would like to graciously punt
20 that over to the Senior Commissioner at the dais.

21 COMMISSIONER BOYD: That's a—we don't know
22 yet, to be honest. First, we've not totally abandoned
23 hope that the PIER program or a PIER-like program will
24 yet be authorized through one mechanism or another. So
25 that's job one for us.

1 Job two, as we've told our employees, is don't
2 get disturbed by the fact that some people will be
3 working on that questions, "Okay. What do we do in the
4 future?" The money carries on for quite awhile, two
5 years of appropriation, several more years for total
6 exhaustion of encumbrances so we are now sorting out the
7 projects that we want to keep going, seeing if there's
8 any new projects that we can carry out even though
9 funding will dry out shortly, well theoretically they'll
10 be no more revenue after the end of this calendar year.
11 So we don't know. I'm glad you brought it up, at the
12 end, although half the audience would have been gone, I
13 was going to give a commercial for the value of the PIER
14 Program, Public Interest Energy Research, and the good
15 that we think that it does to try to stimulate various
16 forms of new businesses in California. For years and
17 years and years an awful lot of silent, almost, work as
18 that's the way academics tend to be has been done on
19 biomass, bioenergy by the Energy Commission's Public
20 Interest Research Program, an awful lot of it at UC
21 Davis and that still goes on at the Biomass
22 Collaborative sits over there and we'll hear from them.
23 Jim—because Jim mentioned it—something that I
24 didn't mention in my opening because I was waiting maybe
25 until the end of the day is just this emphasis on waste.

1 California has so much waste in the forest, in
2 agriculture and even urban waste, we've avoided talking
3 about energy crops and purpose grown crops for energy in
4 California for quite awhile because that's a real hot
5 button in various communities, possibility not correct
6 or not deserved. That's not a popular defense these
7 days.

8 The thing that we've been unable to do for
9 more than a decade, well probably two decades I've
10 worked on this issue, is monetize the values to even get
11 recognition of the values, what's more monetize the
12 values, of using waste. If farm communities can no
13 longer burn things in the field, there's an expense
14 associated with getting rid of that material so why not
15 put it to good use? Why not find a value for it? And
16 the same goes true for manure, for food—all the things
17 that we've talked about—food processing waste, forest
18 waste in particular.

19 As Glenda knows only too well, we had a
20 terrible time getting into the forest. There is great
21 fear among certain communities that today you will take
22 out the debris and tomorrow you will cut down a few
23 little trees and day after tomorrow, you'll whack down
24 the old growth forest and that's never been the
25 intention but it's hard to even get a footfall into the

1 forest to get at these materials. It's taking us time,
2 we need to monetize those values because governments
3 getting tired of subsidizing things and particularly in
4 these tough times. That's something that I hope comes
5 out of continuing dialogues like this, is recognition of
6 the value and monetizing those values so they can offset
7 the seeming higher costs associated with using the waste
8 stream. In the long run of it, I don't think there is a
9 higher cost but our system doesn't recognize that yet
10 and I hope you all can work on this.

11 This continued reference to my legacy today
12 which shouldn't have happened is the fact that I did say
13 that I was retiring at the end of this year. I've tried
14 two terms as Commissioner to get this thing off dead
15 center and maybe it's off dead center but on my working
16 watch I guess we're not going to totally cut all the
17 ribbons I'd like to have seen. In any event, thank you
18 for referencing it. You've got a lot of good people to
19 finish it.

20 MR. NESTER: Good morning. Greetings from
21 Fresno. I'm Scott Nester with San Joaquin Valley Air
22 Pollution Control District. As you know, San Joaquin
23 Air District and the Air Resources Board are responsible
24 under the Federal Clean Air Act for meeting public
25 health standards for air quality.

1 We have four basic functions at the San
2 Joaquin Valley Air District Planning: making up
3 regulations to reduce emissions, permitting stationary
4 sources and enforcing the regulations on the stationary
5 sources. Just an overview on the San Joaquin Valley Air
6 Quality, I call this slide the good, the bad and the
7 ugly. Air quality is improving. That's the good part.
8 We've obtained the PM10 standard; we did that a few
9 years ago. We're seeing steady air zone improvements.
10 We've got the one hour ozone standards that's kind of on
11 its last legs. We're about to obtain that over the next
12 year or so. We've also had the cleanest winters on
13 record for the fine particular matter, PM2.5. We
14 attribute a lot of that to a lot of the open burning
15 that has been cleaned up as well as fireplace burning
16 that we've adopted mandatory restrictions on in 2008.

17 We live in a bowl as this map kind of shows
18 here. We've got mountains on all sides, our climate is
19 Mediterranean and both during the summer and the winter
20 we get very stagnate conditions. That's what helps keep
21 the pollution there, that's what actually helps form
22 pollution in the San Joaquin Valley. So we have this
23 predisposition, this natural predisposition to ozone and
24 particulate matter. Because of that we need about a 75
25 percent reduction in nitrogen oxide emissions in order

1 to obtain the 1997 ozone standard that was propagated by
2 EPA. A 75 percent reduction from the 2005 level and we
3 are on track to meet that reduction by about 2023. A 75
4 percent reduction in anything is huge. As you can
5 imagine, it's going to take every effort possible to get
6 those kind of NOx reductions.

7 The other--this is the ugly part of it. The
8 mobile sources contribute about 80 percent of the NOx
9 emissions. Those reductions are slow, they are coming
10 but they are slow. It takes a long time to turn over
11 the fleet that is responsible for the majority of the
12 NOx emissions and they're beyond the District's
13 authority. The Air Resources Board has done a lot over
14 the last few years with the Truck Rule. It's very
15 controversial but very effective in reducing NOx
16 emissions and PM emissions.

17 The other part of this is that stationary
18 source reductions are diminishing. We've invested--the
19 folks in the San Joaquin Valley have invested billions
20 of dollars to reduce emission from stationary sources
21 and area sources, the local businesses in the San
22 Joaquin Valley.

23 The last ugly part of this is the EPA Ambient
24 Standards, air quality standards, those health-based
25 standards are getting tighter all the time. We did see

1 the administration defer the latest proposal for our new
2 ozone standard until 2013. It's inevitable that that
3 standard is going to get tighter as well as the
4 particulate matter standard. Everything is getting more
5 difficult it seems like.

6 Our clean air strategy is kind of summed up
7 here in these seven points with a kind of a fancy title,
8 "Leave no stone unturned." We can't really reject
9 anything, any kind of option right now. We have to do
10 cost effective regulations on our businesses. We count
11 greatly on the state regulations for onroad and offroad
12 diesel engines, trucking construction and agriculture is
13 going to be part of that.

14 We are working more in incentive grants. Our
15 goal is to get \$200 million per year in incentive grants
16 to reduce emissions and that's mainly NOx emissions that
17 we're paying for. That's the precursor for both ozone
18 and particular matter and we need to reduce NOx more
19 than anything else.

20 We also have a fairly robust land use program,
21 things have changed over the last few years in
22 construction and land development but we have that
23 program there when it's going to be needed again.

24 We also have a very strong public engagement
25 program called Healthy Air Living, the tagline there is

1 make one change. We want to get the public behind the
2 clean air efforts and actually doing their part to
3 reduce emissions and support the work of the Air
4 District.

5 We also need and have a technology advancement
6 program that's going to find us new ways to help the
7 Valley out, ways that we don't know of yet over the next
8 decade or so. So we've got several million dollars
9 every year going into technology advancement.

10 We're also looking at co-benefits from the
11 state climate change activity, cap and trade when that
12 develops.

13 Talking about agriculture. Agriculture has
14 been subject to several major district initiatives over
15 the last few decades. Open burning is probably the
16 biggest one. We've been able to reduce open burning
17 emissions by 80 percent since we started tracking
18 records. I think it's actually more than that. The
19 days are gone when you can see these columns of smoke
20 from agricultural burns in the San Joaquin Valley. You
21 don't see that anymore.

22 The agriculture industry became subject to
23 permitting in 2004 and they've had a lot of catching up
24 to do in the last seven years or so. They now have
25 regulations for confined animal facilities, dairies,

1 stationary internal combustion engines, conservation
2 management plans for fugitive desks. We also have an
3 off field fugitive desk regulation and they're also
4 subject to Title 5 federal permitting. There are state
5 regulations that they have to comply with, these are
6 just the air regulations. There's also water
7 regulations, water quality regulations, that they need
8 to comply with too.

9 But the state regulations, pesticides,
10 portable equipment, the truck rule has had an impact on
11 our growers in the Valley and the offroad equipment rule
12 in 2013 is going to have an impact as well. That's
13 going to be for tractors and harvesters and that kind of
14 equipment.

15 We've, over the last few years realizing that
16 we need a huge amount of NOx reductions that we can't
17 get through the regulatory process, we've been putting a
18 lot of effort into incentives and actually paying for
19 emission reductions. So far we've invested \$300 million
20 in public money and achieved about 82,000 tons of NOx
21 reductions. The fleet upgrades include heavy duty
22 diesel trucks, very successful program with agricultural
23 irrigation engines, converting those to cleaner diesel,
24 converting some all the way to electric pumps, offroad
25 equipment such as agricultural tractors and construction

1 equipment, locomotives is not listed here, diesel school
2 buses and gross polluting passenger vehicles. We're
3 trying to do as much as we can with incentives realizing
4 that the stationary source regulations are just not
5 available at this point.

6 The Valley Air District Incentive Program is
7 recognized as the most productive in the state for
8 turning funding into reductions. We have partnerships
9 with other districts and we're administering a couple of
10 statewide programs now for incentive programs. I've
11 already mentioned the technology advancement program.
12 That's going to help us develop specific solutions for
13 Valley situations which wouldn't happen without us, I
14 don't think.

15 Our perspective on biofuels. I guess it's
16 interesting—we've got to remember that the San Joaquin
17 Valley Air District is an Air District. Our mission is
18 focused on public health of Valley residents. The
19 greenhouse gas strategies that the state has put into
20 place, it's not our mission and we will count on those
21 co-benefits if they happen. Our mission is really
22 focused on public health and those are the acute and
23 chronic public health issues that folks face on a day-
24 to-date basis.

25 Waste-to-fuel is a big part of our landscape

1 in the San Joaquin Valley. We really count on the
2 biomass power plants. We've got about a dozen of them
3 right now burning that agricultural woody waste, the
4 woody biomass. I'll have to compare notes with you and
5 get more information on getting more energy out of
6 those—out of that wood waste because we'd like to see it
7 used more efficiently. Dairy waste is a big source of
8 volatile organic compound emissions which contribute to
9 ozone formation. And then biodiesel. We're still
10 uncertain about the biodiesel, there is a particulate
11 matter reduction and greenhouse gas benefits but from
12 what we've seen the NOx issues are not overcome yet. We
13 still see that there is a bit of a NOx increase from
14 biodiesel. Purpose grown feedstock is something that
15 we're very interested in, replacement of current crops
16 obviously and we would need to see a refining and
17 marketing capacity that would come under District
18 regulations.

19 Talk about dairy cows in a minute here. We've
20 got 2 million dairy cows at the moment in the San
21 Joaquin Valley. That's about 1 cow for every 2 people
22 in the San Joaquin Valley. That generates about 200
23 million pounds per day of dairy waste, 640 tons per day
24 of methane from the lagoons. That's just from the
25 lagoons from where the liquid and solid manure go.

1 There are more emission and enteric emissions that come
2 directly out of the cow. What we see is an annual
3 potential for about 2.1 million megawatt hours. That
4 was an EPA estimate from a couple of years ago. We
5 translated that into diesel equivalent and we came up
6 with about 176 million gallons per year which was higher
7 than the estimate that you just saw but it's in the same
8 ballpark.

9 Our digester experience is based on about a
10 dozen projects to date. What we're seeing is that some
11 growers, some dairy farmers are interested in installing
12 generators. The best available control technology for
13 NOx has been kind of a sticking point for some of those
14 operators, some of those engines. They've had
15 difficulty meeting those NOx limits but, as of right
16 now, the engines and the catalysts are performing well.
17 We need those NOx reductions, we need to prevent
18 significant NOx increases in order to advance our clean
19 air strategy. That's central to all of this.

20 What we're seeing also is that the onsite
21 electrical generation from an air quality standpoint is
22 that it competes with the cleaner central power plants.
23 The central power plants are obviously cleaner. We
24 would like to see electrical generation as clean as
25 that.

1 We're looking more toward biomethane to be
2 used as vehicle fuel and for injection into the utility
3 pipelines. What we're seeing as probably the most
4 promising opportunity is multi dairy gas gathering
5 system. Plus a central plant that conditions and
6 generates electricity or injects it to a pipeline there
7 but a multi dairy gathering system appears to be the
8 most economical. There have been some attempts at that
9 sort of business model. I'd like to see more of that.

10 What we're seeing also is that those can
11 produce excess energy, more energy than can be used
12 onsite. As we're seeing, projects need startup
13 assistance and they need some utility rate structure
14 adjustments for the feed-in tariffs.

15 That's pretty much the conclusion of my
16 presentation. If you have any questions, I'd be happy
17 to talk a little bit. We're busy. Thanks.

18 COMMISSIONER BOYD: Before we open up for any
19 comments from the audience on this one topic, with the
20 consent of the Secretary, I know a gentlemen from the
21 Air Resources Board is in the audience, Mike Waugh, and
22 we work with him a lot and he has indicated a
23 willingness to say a few words about the low-carbon fuel
24 standard. And, since it's been referenced here several
25 times and since some of us see it as a large driver as

1 new opportunity in this arena, I thought Mike might want
2 to say a few words to add to our knowledge base here.

3 MR. WAUGH: Thank you, Commissioner Boyd.
4 Good morning, Secretary Ross. I am Mike Waugh. I am
5 Chief of the Transportation Fuels Branch at the Air
6 Resources Board.

7 First of all, I'd like to thank the panel.
8 They did a lot of the heavy lifting for me this morning.
9 Allan and Jim especially talked about the low-carbon
10 fuel standards so I think a lot of people are familiar
11 with it.

12 There are a couple of things that I want to
13 bring up. One really gets to one of your issues,
14 Commissioner Boyd, and that is the monetization of some
15 of these lower CI fuels.

16 As you know, the low-carbon fuel standard
17 drives the fuels to a lower carbon intensity which
18 really means waste products. You can see from Jim's
19 graph that the biogas and some of the waste derived
20 fuels have the lowest CI and that is really what the
21 LCFS drives.

22 So the lower the CI the better and I like to
23 think the better has more value in the marketplace. The
24 LCFS is a performance based program. It doesn't tell
25 you which fuels to use but if you use electricity or

1 hydrogen or lower CI biofuel, you're going to be
2 successful in the program.

3 One of the things about the low-carbon fuel
4 standard is that it's backloaded in that the first years
5 are pretty modest requirements, for example Jim
6 mentioned that this is the first implementation here for
7 the LCFS and there's a .25 percent CI reduction target
8 for this year, it goes to .5 percent next year and 1
9 percent after that. Toward the end of the decade, that
10 curve really starts to dip and we think that the low-
11 carbon fuel standard is going to present more of a
12 challenge doing those years.

13 We have seen in the first and second quarters
14 of this year that people have overcomplied with the LCFS
15 and have generated credits. And this is an important
16 market when you generate credits and when you overcomply
17 with the curve. We think these credits are going to
18 come in handy later on and will be necessary later on to
19 meet the low-carbon fuel standard. As such, I think
20 that's where the value of the lower carbon intensity
21 fuels is going to come. It will be recognized so that
22 people will be paid for the lower CI fuels, the waste
23 derived fuels.

24 A couple of things we're taking to our board
25 as proposed revisions. One is that we're going to be

1 more clear on our credit market, how it works, so that
2 these credits can be traded more easily. Again, I think
3 we're going to end up publishing some average credit
4 prices and this will be a market signal and when you see
5 that market signal, credit prices perhaps rise as the
6 LCFS becomes a little bit more challenging in the later
7 years, that's going to be the market signal that people
8 are going to realize that, "I'm going to get paid for my
9 lower CI fuels."

10 The other proposed revision we're taking to
11 the Board in December is an enhanced regulatory party.
12 There's some discussion about, again, not realizing some
13 of the lower CI fuels in the marketplace. The way that
14 the program works now, the regulated party is the party
15 that puts the fuel into the marketplace and so if you're
16 a biofuel producer, chances are you've sold your fuel to
17 somebody else, say an oil company, and passed along the
18 obligation for that. At the end of the day, the fuel
19 producer is not the regulated party, it would be the oil
20 company or whoever puts it into the market.

21 We're proposing to revise for the LCFS is that
22 if, in fact, for example you have a biofuel producer
23 that's producing an 80 CI ethanol and the buyer says I
24 don't need 80 for this, I'm only willing to pay for 90
25 or you don't rebrand it, what would happen is that with

1 this proposal, if the Board approves it, the biofuel
2 producer can pass some of the obligation along and keep
3 some of the obligation which that cannot due now and by
4 doing so they would generate credits themselves. And
5 they can say, "If I don't get value in the marketplace,
6 I'll give you what you're willing to pay. I'm going to
7 generate credits and hold credits now because,
8 currently, only regulated parties can generate credits."
9 So fuel producers would say, "I volunteer to be a
10 regulated party because I want to generate credits
11 because I want to generate credits because I'm going to
12 get the value from my products." So that's another
13 proposal that we're going to take to our Board.

14 In closing, again really, I thank the panel
15 for their discussion on the low-carbon fuel standard but
16 I want to get right to the point that we think the value
17 is going to be there in the low-carbon fuel standard
18 when it gets more challenging, when the credit signal is
19 out there and then also people can generate the credits
20 and get value for their product through this enhanced
21 regulated party.

22 One other comment regarding biodiesel and NOx
23 that Scott mentioned. We have a separate regulatory
24 process underway to look at mitigating NOx from
25 biodiesel and that's being—that's a separate regulatory

1 work that's being done for renewable diesel and
2 biodiesel, looking at B5 and B6-B20 at some point.
3 We're looking to address that so more biodiesel can
4 enter into the marketplace.

5 COMMISSIONER BOYD: Thanks, Mike. Thanks very
6 much. I have no questions. If anyone has a question or
7 comment that they'd like to make about what's been
8 stated in this forum so far, now's the time.

9 UNKNOWN SPEAKER 1: Well, yeah, I was wondering
10 with the lower carbon intensity, if there isn't some
11 manner in which various agencies in the state can start
12 cooperating like air quality to allow for some of the
13 inherent mitigation that's in biofuels to give it some
14 kind of grace with regard to permitting processes.

15 MR. NESTER: I think that's a really good
16 point. I think we would, right now we're probably not
17 set up to—for that sort of exemption or waiver or
18 something. That would probably need to come through the
19 legislature in order to give some kind of variance for
20 low-carbon fuels. If they meet all the standards, if
21 the—if the processing plant could meet all the standards
22 then there's not an issue. Did that get to your
23 question?

24 UNKNOWN SPEAKER 1: I was just curious about
25 the issue of permitting plans that are going to be

1 developed by biodiesel fuels and whether there would be
2 reduction downstream for example.

3 MR. NESTER: Right.

4 UNKNOWN SPEAKER 1: But considering that
5 reduction downstream that you're going to, in essence,
6 recognize the benefit of that process and ease or
7 facilitate the permitting that's going to be required to
8 enable those processes to come online sooner. So, like,
9 development of homeland economy, kind of, consolidation
10 of the various departments that have influence over the
11 eventual permitting of facilities.

12 MR. NESTER: Kind of like a holistic approach
13 to the problem?

14 UNKNOWN SPEAKER 1: Yes.

15 MR. NESTER: I think it's—those kinds of
16 solutions are important, I would think, right now like I
17 said it would probably need some kind of legislative
18 adjustment for that.

19 MR. MORRISON: One issue I think there is with
20 permitting is a lot of the permitting is done on local
21 level and state agencies don't have as much jurisdiction
22 over those as much. For example, water issues are the
23 local water board and not a state agency. The same with
24 the local air board. We, within the state, we've
25 actually discussed this within a group I participate in.

1 What the state can do to help permitting. Again, we
2 don't have the—we're not the ones to sign off on those
3 permits. We can try to help by directing you to which
4 agencies they are, kind of bringing you together and
5 acting as a forum. Underneath the CalEPA, they are
6 trying to put together that type of program. But,
7 again, you have to remember that the state isn't the one
8 who signs off on it. We have to be very careful of our
9 jurisdictional responsibilities with the county and
10 local agencies.

11 VAN RAINEY: [INAUDIBLE]

12 MR. MORRISON: Excuse me?

13 VAN RAINEY: [INAUDIBLE]

14 MR. MORRISON: Yes. Well, hopefully, CDFA and
15 Measurement Standards is not but I think everybody
16 within the agencies is aware of this and is—all the
17 people are acutely aware of it and aware of the need to
18 get facilities online to get to the right person and I
19 think they'll try to help you.

20 MR. MAYUGA: Yes. My name is Mark Mayuga.
21 Madame Secretary, Chairman Boyd. I represent a company
22 here in Sacramento, actually its base, and the name of
23 the company is Calmetha. Calmetha is a partnership of
24 Bechtel USA and Siemens Germany. We are in the process
25 of developing a biofuels project in California using

1 biowaste, everything from dairy waste to forest
2 reduction waste. Specifically we're focusing in on rice
3 straw right now. I understand that's the big bad boy in
4 the state. The Siemens process has been in existence
5 for over eight years in Europe, actually longer. We are
6 in a process which can take virtually any type of
7 biowaste. Actually, I was very excited to hear, was it
8 200 million pounds of dairy waste is very exciting stuff
9 to me.

10 [LAUGHTER]

11 You know. That's a lot of tonnage. My plant
12 or the plant we're developing requires roughly a half a
13 million tons of biowaste. What's interesting about our
14 process is that we are privately funded. There are no
15 government requirements; there are no tax incentives, no
16 grants, no anything. Totally privately funded to the
17 extent that we can build at least five of these plants
18 in California. Each plant is worth roughly \$850 million
19 to \$1.2 billion. This is a real project. I've been
20 working with Glenda, Mr. Houston and some of the folks
21 at CEC and this is real stuff folks. I heard a lot of,
22 "Gee, I wish we had this and I wish we had that." This
23 plant will produce 70-90 million gallons of methanol.
24 We actually have contracts, letters of intent on
25 contracts for the sale of that methanol already. We

1 have that much demand worldwide.

2 We are also in discussion with the Department
3 of the Navy regarding biodiesel and our methanol out of
4 Hawaii. So this is kind of an innovative project but
5 it's kind of old hat for Siemens. I think you know them
6 by reputation. Our biggest challenge though,
7 truthfully, is acquiring and securing sustainable
8 feedstock, believe it or not. It seems that the owners
9 of the feedstock may consider it garbage or whatever but
10 when it comes to dumping it or whatever they want to get
11 paid a very premium. It's been a challenge for us.
12 Specifically with the rice growers. We're getting
13 around that to some degree. At the end of the day, when
14 you produce 70 or 90 gallons of methanol for sale,
15 liquid methanol, this is not methane but liquid methanol
16 and it is the new fuel in Europe and in Asia, not to
17 mention the fact that it is the basis for a lot of
18 plastics, glycol, things like that. This is an
19 interesting project and the only thing I'm asking if
20 there's anybody here in the audience to give me your
21 biowaste. And you dairymen out there, I could use
22 everything you've got. We can take olive pits, almond
23 shells but anyway I just wanted to interject this into
24 the meeting now because there's a lot of what this plant
25 will do, this project will do, I think it will answer a

1 number of questions or at least answer some challenges
2 and opportunities.

3 Siemens is serious about this. They have the
4 money to invest. I think you know they have a huge
5 reputation worldwide. We are prepared to entertain any
6 offers of waste, biowaste, especially that woody stuff
7 out of the forest. Anyway, thanks for your time.

8 COMMISSIONER BOYD: Can I ask you a quick
9 question about methanol as a transportation fuel? You
10 said it's being used as transportation fuel. In what
11 form or?

12 MR. MAYUGA: It's being used as a fuel
13 amendment, primarily. In China we've found that they're
14 using as much as 30 percent methanol in their diesel.
15 They're using it quite a bit in Europe as an amendment
16 to clean up the fuel. Of course, there's also the huge
17 demand of plastic so that's the other thing. They want
18 a billion gallons, basically.

19 COMMISSIONER BOYD: I was wondering about if
20 biochemicals aren't the real big draw. We've had a lot
21 of experience in the state with methanol, our first big
22 alternative fuels—

23 MR. MAYUGA: Yeah.

24 COMMISSIONER BOYD: Effort years ago was
25 methanol and, frankly, it was the lever that forced the

1 oil industry to clean up gasoline and diesel fuel, the
2 threat of it. But it's also more highly corrosive than
3 ethanol and, to me, it seemed to drift away as a viable
4 transportation fuel so I was kind of curious to hear you
5 say that some people are considering it for
6 transportation.

7 MR. MAYUGA: Biomethanol, bio-based methanol,
8 apparently is not as corrosive as the petroleum based
9 methanol. We have four plants right now in the United
10 States that are using natural gas, cold drive methanol
11 and it's nasty. The bio apparently in Europe,
12 apparently, they figured out a way—the right formulation
13 and they're using it in their diesel cars. Almost half
14 the sale of automobiles are diesel cars rather than
15 gasoline.

16 COMMISSIONER BOYD: Well that's a tax policy
17 artifact.

18 MR. MAYUGA: Yeah, maybe.

19 MR. RAINEY: Can the state or the USDA comment
20 on or can or are they doing anything to aggregate
21 resources of waste streams, be it from farms, forests,
22 whatever. Are there any programs underway that would
23 enable the aggregation and delivery of waste streams?

24 DR. HUMISTON: Yeah. We have a regional
25 industry cluster in the Northern Sierras right now

1 looking at creating a template for exactly that.
2 Amongst the three projects they have underway, one of
3 the major one is transportation exchange. What they
4 found up there is of the 20 some plants, they often have
5 a trucker hauling material 16 miles to Plant B while at
6 the same time the trucker next to it is hauling material
7 70 miles back to Plant A and it's just ridiculously
8 inefficient. So they're working with our program and
9 several other partners to create a transportation
10 exchange to actually do exactly that.

11 We're going to be utilizing that as a template
12 that for other parts of the state and other sources of
13 biomass.

14 SECRETARY ROSS: Thank you.

15 COMMISSIONER BOYD: I guess we can proceed
16 with the next group of folks.

17 MR. RILLERA: I'd like to invite the
18 Agricultural Business Panel up.

19 MR. JENNER: Are we ready to begin? I'm Mark
20 Jenner and I'm an economist at the California Biomass
21 Collaborative. I'm an immigrant from the Midwest and
22 actually I spent about 10 years working for the American
23 Farm Bureau Federation so I have a passion for biomass
24 and what it can do. In fact, I recently began referring
25 to biomass as carbon that serves a purpose. We get

1 caught up in the climate change and carbon policies and
2 those are focused on dealing with leakage from the
3 system, not in dealing with what we can do with it. So
4 that's my little personal promo.

5 I'm a part of a great team. Steven Kaffka is
6 our Director of the Collaborative, Rob Williams is an
7 Engineer that's been involved with the Collaborative
8 since its inception and Jimin Zhang is doing the
9 research, the crop research, on the biofuels and
10 bioenergy crops for Steve and then I'm kind of filling
11 in the gaps.

12 Okay. We were asked to cover a lot of ground
13 and all of these topics are important: an overview of
14 the biofuel feedstocks, biofuel co-products, water use,
15 purpose grown crop locations, ag waste chain feedstocks,
16 some of the relationships between the national ag's
17 policy for biofuels, strategy of achieving these
18 policies and current status of the purpose grown
19 materials in ag residues. Each one of these things
20 could be a session or a workshop. So I'm going to skim
21 across the surface pretty fact. I'm hoping that these
22 will be available later. We can come back, as time
23 permits, in the coming days and address these more
24 carefully.

25 I've got to start with a qualifier, since

1 we're talking--the reason I was brought to California was
2 to look at the economics of purpose grown crops. So
3 I've done a lot of thinking on this and I want to set
4 these three kind of qualifying factors in play. It goes
5 against some of the things I've done in the past but
6 purpose grown crops are a commodity. They have a
7 different economic structure from when you're dealing
8 with a residue for instance. The demand is directly
9 associated with the production of that commodity. When
10 you're dealing with a residue, you're dealing with a
11 byproduct. The amount that's produced--when you produce
12 a certain amount, the amount is processed and utilized.
13 It may be completely different than the demand for the
14 commodity of the crops that's produced. Those residues
15 tend to be pretty homogenous and alike in character.

16 So they kind of come in and out of the
17 economic system as the demand requires. The waste then
18 are things that are a combination of things and they're
19 leftovers like manure--I'm a manure guy academically
20 speaking. Manure. My definition of manure is leftover
21 corn and soy beans, you know, it's really not bad stuff.
22 But the wastes are problems and when there's excess
23 supply of materials that overload the demand that
24 requires additional costs to remediate. So there's
25 three different economic structures in play when we talk

1 about ag biomass.

2 Overview really of the distribution of
3 California biomass is regionally defined. Forestland is
4 rain fed and typically on steep slopes. Agriculture in
5 the large areas is irrigated and largely flat. Solid
6 waste is concentrated around the urban areas and
7 wastewater can either be in the urban areas where the
8 people are or in the rural areas where the food
9 processing facilities are. Not all biomass is
10 uncommitted. There's about 5 million metric tons of
11 residues used in power generation currently in California
12 that wouldn't be available for liquid fuel or wouldn't
13 be directly available. It could be moved out of the
14 power industry but it's already committed.

15 Food processing residues are often fed. It's
16 an amazing integration of systems. If the cattle
17 industry wasn't able to take the food processing
18 residues that they are and turn them into economic value
19 then they'd have to be hauled and land applied at an
20 additional cost.

21 And now we bury somewhere along the lines of
22 20 million metric tons of biogenic materials in
23 landfills that's already kind of committed. If you
24 think it's easily available, talk to the compost
25 industry who would like to have access to them. They

1 also have committed biomass materials.

2 So this is a great map, the green is where the
3 forest residues are, the orange is where the ag areas
4 are and you can look at San Francisco, Sacramento and
5 Los Angeles and you can see the cluster of landfill and
6 municipal solid waste and the grease concentrations.

7 This is the traditional, this has been around
8 for awhile, the assessment of what's available
9 technically and total universe of biomass is the
10 combination of the purple and the green. The technical
11 available is what can be physically removed but this has
12 no economic component to it. So what's actually
13 available economically is probably a great deal smaller
14 than either of these categories. There's about 33
15 million metrics tons in the purple and about 83 million
16 in the green.

17 So this is what I was going to rush through a
18 little bit. I didn't put this busy slide up here,
19 series of slides, to confuse you but you basically have
20 feedstocks and it gets converted into technology and you
21 get some byproducts and some outputs and yield out of
22 it. This is a great collection that Rob Williams put
23 together. These first two you can see are ag crops, the
24 grains, the starches and the sugar crops, sugar beets
25 and sugar cane and then the oil seeds as well as the

1 pathways that they take.

2 This is where the municipal wastes come in and
3 they're available for anaerobic digestions, some of the
4 ag wastes are available also. They produce methane.
5 This is where the lignocellulosic crops come in and this
6 is specifically for cellulosic ethanol production but
7 they can be produced in these other categories and then
8 you get some conventional technologies that can take
9 advantage of some of the biofuel things.

10 The point of me putting in this series is that
11 this is really complicated. If you are overwhelmed,
12 welcome to the club. It's a very complicated series of
13 processes that we're asked to attach economics to and
14 fit into the policy environment. It's happening and we
15 know more today than we knew not very long ago. It's
16 great that it's still a work in progress.

17 I came to California from the Midwest and it's
18 been an eye-opener for me. I've worked in agriculture
19 for 30 years and I'd always heard about California as
20 this mystical land out on the West Coast. I got out
21 here and it was amazing. I couldn't believe how
22 productive California is. I've had that with me as I've
23 begun working here. It doesn't really fit the ag models
24 that are being used to evaluate what's possible in the
25 U.S. and California is a major player of that production

1 but it falls between the cracks of the models.

2 So I developed with Steve Kaffka this local
3 model to evaluate available purpose grown crops in
4 California and it worked pretty well. I'll talk about
5 that in just a bit. To try to get to some talking
6 points about what's available in California, I
7 recategorized the value of ag production in the sense of
8 agriculture for the top 5 producing states, which are
9 California, Texas, Iowa, Nebraska and Illinois.

10 The first column is what California does and
11 the second column there in the box is the average of the
12 next four states. The last column is how many times
13 more productive California is than the rest of the top
14 four or five producing states. The (indiscernible) of
15 doesn't produce food for humans. You know, we talk
16 about food versus fuel. California is producing food.
17 They produce 80 times more than the average of the next
18 top four producing states. That is according to Mark
19 Jenner's classification of categorization.

20 The rest of the debate, the rest of the
21 country is talking about feed and animals, food products
22 and other fiber crops and then California is also
23 producing almost 10 times more ornamentals and other
24 products. The thing is of what's important about this
25 is that these high value crops are not going to be

1 replaced with purpose grown ag products. Of what the
2 modeling showed of what I did is that the crops that
3 came out where the least profitable crops. They were
4 the local small grain, hay crops and some of the
5 marginally profitable lands. They weren't the food
6 crops that came out of the rotations. If a plant went
7 into a local place and wanted to have a supply of any of
8 these five crops this is kind of a way if they were
9 guaranteed by a production contract an additional \$20 an
10 acre profit by anyone of these crops individually.

11 Those regions are how—I did each of these runs
12 independently so you have to look at a region by itself,
13 like across all the crops, you can't really compare them
14 for each crop. You can see that the central region—the
15 San Joaquin Valley—I relabeled these so that you could
16 understand the labels and I think maybe I didn't get
17 them right.

18 So the sugar beet is the Northern San Joaquin
19 Valley, the one with the high sugar beets. I used
20 regionally specifically budgets for crops and used the
21 same, pretty much, the same prices as the energy crops
22 and this is what it showed is that for each energy crop
23 you get a different outcome.

24 Sweet sorghum—Bryan Pellens is popular down
25 there. This is all hypothetical, of course, based on

1 2007 prices which is different than today. This is
2 close to the end, I put this slide in in this
3 presentation because it stunned me.

4 What it says, this came from Brian Jenkins
5 who's the Director of the Energy Institute, and he was
6 the Director of the Biomass Collaborative. So what it
7 says is that for a dry ton of biomass you can get the
8 most bang by producing electricity in combined cycles or
9 biomass cofiring powering systems. Rob told me that
10 actually that is really hypothetical today, it's not
11 quite there. Even if you go down to the 25 percent
12 conversion of electricity because, and Rob explained
13 this to me, everything we know about the inefficiency of
14 electrical production and the efficiency of transmission
15 from once it's created is true. Also the efficiency of
16 the fuel, the energy and the fuel but what breaks down
17 is the conversion of fuel into road miles in a vehicle
18 is not efficient.

19 So anyways, this is based on a car, an
20 internal combustion car, that gets 44 miles a gallon so
21 if you took it down to a car that was getting 30 miles a
22 gallon, the internal combustion engine would even look
23 worse.

24 So just a bit about the carbon policies,
25 here's a race to assess these carbon impacts and the LCA

1 methodologies are still being developed. EPA uses the
2 one methodology and ARB uses another methodology. And
3 the purpose grown energy crops don't really have a
4 presence historically so they're not really part of the
5 current—they're all based on estimates and guesses. The
6 California low-carbon fuel standard has a unique way of
7 reducing the carbon intensity of fuels but doesn't
8 specify how they're going to get that reduction met.

9 Part of this too at the federal level, they
10 mandate not only the carbon intensity, minimum carbon
11 intensity, but also how it's going to be produced.
12 There's a limit to flexibility and these two policy
13 tools don't match. It's not clear. It looks like
14 everybody is going to have to meet both of them to
15 comply with both of them in different sets of rules.

16 I get it. It's kind of breathtaking, I guess,
17 that even at the federal level with the Department of
18 Energy and the EPA cannot agree on what biomass is and
19 what it emits, whether it's a positive or a negative.

20 So really I think that this is the last slide
21 I have. Prospects for ag feedstocks and for biofuels in
22 California will be dependent on where they are developed
23 because different regions of the state have different
24 resources that they depend on for agricultural purposes
25 whether it's grown as a commodity or as a leftover.

1 The cost and efficiency of the conversation of
2 the technology and also the abundance of the feedstock,
3 stability in biomass and the carbon policies is
4 nonexistent right now. That's a big problem. I mean we
5 go back to the air board issues with the digesters,
6 that's a Clean Air Act issue. That's not a greenhouse
7 gas issues. We come through these policies in waves
8 and, with manure we went through a lot of quality
9 process and then we went through an air quality process
10 and now we're going through greenhouse gas process. We
11 haven't even gotten to the greenhouse gas regulations.
12 The barriers for digestive production, you know, even
13 though they're legal. I'm not wanting to add to that
14 debate. Those regulations are based on air quality not
15 greenhouse gases.

16 There are many investment risks and
17 environmental concerns and they want to be met. Biomass
18 has lots of good stuff. It can be produced into
19 anything that we're using carbon based products for now.
20 If you look at the plastics, the wood, the paper, the
21 food, even I throw in recreation because it's really
22 great that we have these national parks with the
23 sequoias and Yosemite that are really important when we
24 talk about biomass production, that's really what is a
25 lot of that value.

1 Just a lot of challenges but if we build on
2 the fact that biomass has known benefits, we can
3 mitigate a lot of these and lower the cost of
4 investment. That's my pitch. Any questions?

5 MR. KING: Good morning, everyone. I'm Jack
6 King with the California Farm Bureau. It's a pleasure
7 to be here and I commend you on your discussions.

8 It's a big issue with California farmers and
9 ranchers. We are energy consumers. We're potentially
10 energy providers. We are also in that kind of crossfire
11 of having to deal with environmental issues whether it's
12 disposing of waste, dealing with air quality so this
13 issue is quite pertinent.

14 I've left in the back and I arrived late so
15 not many had a chance to see this. This talks a little
16 bit about our role as potential energy producers and
17 consumers. I've also left just a little sketch of
18 California agriculture.

19 Mark set it up perfectly to, in his
20 indication, that California is different. We're not
21 uniquely different but we're certainly different than
22 more of the rest of the country.

23 We are a grain deficit state and certainly
24 that creates its own set of pressure points when it
25 comes to maintaining our dairy industry, our poultry

1 industry. It puts us somewhat at odds on national farm
2 policy because some of the directions on national farm
3 policy has to do with the role of our major crops, corn
4 production, soy beans. We're at that point where we
5 have that little different view of the world. There are
6 different pressure points and as a general farm
7 organization we're in a unique spot because we're trying
8 to view it from the broad perspective. Certainly Mike
9 can be very specific to the dairy industry but we have
10 grain producers, we have hay producers, we have
11 timberland, we have fruits producers, fruits and
12 vegetables, nut crops. So we have the broad
13 perspective.

14 I had the pleasure to work with Steve Shaffer
15 with the department and Neil Koehler who will be
16 speaking to you in awhile. Many years ago when we
17 approached the ethanol biomass from the problem solving
18 standpoint, at the point there was a lot of concern with
19 our rice straw, what to do with rice straw after the
20 prohibition on open air burning, for the most the great
21 limitation of it. So that needed to be solved.

22 We have current problems that need to be
23 solved. What to do with orchard prunings. What to do
24 to protect our state from wildfires in our forests and
25 neighboring private timberlands. So those are all

1 concerns of ours.

2 But again California farms and ranchers are
3 very different. We have some 9 million irrigated acres
4 in California. We grow some 600,000 acres of corn, much
5 of that for silage and forage. This compares with 92
6 million acres of corn grown across the United States.
7 Corn farmers who grow corn, they grow soy beans, they
8 grow—they have swine production, beef production and
9 dairy production. So there's a symbiotic relationship
10 between agriculture, how you produce, where the money
11 comes from.

12 I doubt that in California—I think our
13 emphasis will be on problem solving, what to do with
14 waste streams. There's no question that with improved
15 technologies we will find new crops that we can grow in
16 California, new biomass cellulosic crops. I doubt if
17 we'll ever be major ethanol producers from grain just
18 because of the infrastructure in California, quite
19 unlike from the Midwest and the rest of the country.

20 So we'll be looking at problem solving
21 solutions, we'll be looking at ways of how do you deal
22 with the prunings that you have. How do you turn that
23 waste stream into biomass? And, as the gentleman
24 indicated talking about Siemens'' efforts, we need a
25 coordinated effort. Certainly a lot has been done to

1 look at the way to improve biomass to fuel production
2 but we also need to spend a lot of time on ad
3 coordination effort, the logistics of it and some of the
4 particle problems. For example, with the pending
5 complete ban on burning on waste, pruning waste in the
6 San Joaquin Valley, we now shred the prunings and put
7 that bark down on the ground. That creates its own set
8 of problems. The mass of pruned shavings on the ground
9 creates its own set of problems. So we're always going
10 to be looking at practical solution. If we're going to
11 be looking at practical solutions of how can we best get
12 to that biomethane from the dairy industry, from the
13 poultry industry.

14 As an industry we'd like to be part of the
15 problem solving. We know it's not going to be easy. We
16 know we're not going to be major corn to ethanol
17 producers but we think we can be major biomass
18 producers.

19 A lot of our future will rely in science
20 research. Right now when it comes to conversion of
21 biomass to energy we know how to do it but we haven't
22 the mastered how to do it efficiently. How can you get
23 that rice straw into a final biofuels product? How do
24 you do it efficiently? How do you aggregate the dairy
25 waste? So those are some of the challenges that we face

1 and certainly the Energy Commission, the Department of
2 Agriculture—Food and Agriculture has a role in working
3 in finding those answers. I think California farmers
4 and ranchers are innovators. We will grow the crops
5 that have a marketplace. But we also have a very
6 practical approach to that. We want practical answers.
7 We want practical long term answers. As Mark Jenner
8 indicated, we're going to be food producers. As we look
9 at the energy equation, we're going to find times where
10 we're going to be in competition with energy production.
11 That's a slight battle, could be a larger battle, over
12 the siting of solar panels. Do you do that on prime ag
13 lands? Do you do that on marginal ag lands? That's an
14 issue that faces agriculture.

15 Again, I'll stop there. We want to be part of
16 the problem, we want to be part of the problem solving
17 and we have a lot at stake. I think that the strength
18 of California agriculture will continue as long as we do
19 a good job of solving the problems that we're talking
20 about today. So I thank you.

21 MR. MARSH: Good morning, Madame Secretary,
22 Vice-Chairman Boyd. Nice to see you today. Madame
23 Secretary, I have to extend you the greetings from your
24 former staff at the USDA who I met with yesterday
25 morning. They said to say, "Hello." I commend you also

1 for holding this biofuel forum.

2 The California dairy industry is a significant
3 economic engine in the State of California, generating
4 about \$64 billion dollars in annual economic activity
5 and 454,000 jobs. Of course the economic calamity of
6 2008-2010 put out dairy industry in a very difficult
7 position. Environmental regulations are also challenges
8 here in the State of California and our 1.75 million
9 cows that populate the state, they eat, they drink, they
10 milk, they moo and they poo.

11 How do we harness that opportunity from that
12 poo? That has been a challenge and that's something we
13 have been working on. Western United Dairymen is the
14 largest dairymen trade association in the Western United
15 States.

16 In 2001 we developed the Western United
17 Resource Development Corporation in order to utilize
18 funding for SB 5X monies and a grant from the California
19 Energy Commission to attempt to develop methane digester
20 projects in the State of California on California
21 dairies. Today we have about 10 of those projects that
22 are still operational. Unfortunately, the other eight
23 have either for one technical reason or another or
24 simply the lack of available resources to continue to
25 pay for the maintenance and facilitation of that power

1 generation have unfortunately ceased operation at this
2 time. Of course they're anxious to get back on the grid
3 and generate power again but we have to find a better
4 economic model for that to occur.

5 At the same time we've been able to leverage
6 one of those projects for a U.S. EPA grant where we were
7 able to convert milk trucks to run on methane produced
8 on the farm. The farmer today is actually taking his
9 milk that he's producing on his dairy and using these
10 trucks that we were able to convert to run on the
11 methane that was produced on the farm and truck his milk
12 everyday to Hilmar Cheese in Hilmar, California from
13 Tulare County. It's phenomenal the change in the
14 emissions from those trucks when you look at taking a
15 diesel truck and have it run on biomethane.

16 Now, of course, the scrubbing equipment that
17 the dairy producer put in place was—came from a grant
18 and a significant amount of the funding for the digester
19 itself came from a grant. The balance of the power that
20 he's generating from his methane digester today runs his
21 cheese plant and also his dairy parlors on his farm.

22 While regulatory challenges are—well, they're
23 more than a few here in the State of California when it
24 comes to water quality and air quality. And, of course,
25 for one of these renewable energy projects in California

1 it simply adds up to additional cost whether or not
2 you're utilizing best available control technology to
3 mitigate NOx emissions coming from the engines or
4 whether it's perhaps to ensure that we are being as
5 protective as we can of water quality. The grant monies
6 have been very helpful to the California dairy industry.

7 Ed Burton, our State Conservationist, from the
8 USDA and his great time, Ms. Humiston and her team,
9 have been super in helping us try to find innovative
10 uses for some of those funds that have been available.
11 Of course we know that funding stream has been under
12 tremendous stress. Having just come back trying to
13 lobby for Conservation Title, Dairy Title, Nutrition
14 Title with the federal government, we know that we're
15 just kind of anticipating what kind of haircut we're
16 going to take next after the Super Committee with
17 federal program cuts.

18 And Mr. Lucas, the Chairman of the Ag
19 Committee, about a year ago or a year-and-a-half ago in
20 a hearing in Fresno actually said that California should
21 be challenged with regard to utilization of EQIP funds
22 but his suggestion was instead that we reduce some of
23 the regulatory burden that we have on agriculture in the
24 state.

25 Recently a problematic EIR, an Environmental

1 Impact Report, was completed between the Water Board and
2 the Air Board. Of course for a dairy farmer that might
3 be looking at trying to implement digester technology on
4 their farm, this problematic EIR will result in
5 additional cost for the farmer. That's what you really
6 have to have. How do you make these things pay off for
7 the farmer so it's simply not another cost of doing
8 business within the state of California.

9 And in Air Quality, producers are working very
10 diligently on dairy measure and Mr. Sidreen and his
11 staff at the Air Quality District have been very helpful
12 in trying to work with dairy producers in helping us to
13 meet our air quality requirements.

14 Here we go. Show me the money. Where is the
15 money going to come from? We're looking at \$2-4 million
16 for each installation for these digester projects in the
17 state today. As I mentioned, now today, following the
18 problematic EIR we have additional new cost for water
19 and air quality regulations. Of course at the same for
20 the dairy farmer who may want to implement this type of
21 technology, there are few federal and states monies
22 available to cost share. Now if I had a dairy farmer
23 today that had an additional \$2-4 million available to
24 implement this technology, instead he'd probably be
25 trying to pay off his bank from what he lost in 2008-

1 2010. As we saw about 20 percent of the dairy farmers
2 in the state collapse and legacy operations have been in
3 place since California became a state actually
4 disappeared from the landscape.

5 They have to pay for themselves. Dairies have
6 to be competitive and they have to be competitive in the
7 state with our colleagues outside the state as well.

8 Feed-in tariff that should be developed and
9 will help and provide incentive for this; at the same
10 time allowing dairy farmers to aggregate meters. The
11 meters on their operations would help their projects
12 become more cost competitive as well.

13 And then, of course, from the dairy
14 perspective ethanol subsidies have been a challenge for
15 us, both as the small state subsidy and, of course, the
16 federal subsidies with the blenders credits and the
17 tariffs. I think the Congress sent a very clear message
18 to the ethanol industry in the United States when
19 Senator Feinstein and her colleagues voted 73-27 this
20 past summer to terminate those subsidies and now those
21 are, of course, set to expire as well as the tariffs,
22 set to expire on 12-31 of this year.

23 I do hear from time to time comments from the
24 renewable fuels folks that DPG's can be fed to cattle
25 and that's true. We do utilize them in our feed ration

1 but they're not the same because you're taking the
2 energy from the product in order to produce the ethanol
3 which is going to fuel our vehicles; and, of course, the
4 product that you end up with for your cattle doesn't
5 work quite the same to provide the energy for the dairy
6 cattle that you might want because, as I mentioned, the
7 energy has been removed. Of course you have to wonder
8 whether the subsidy itself has had an impact on the
9 development on cellulosic ethanol and, in fact, perhaps
10 provide a disincentive for the next stage or the next
11 iteration of ethanol.

12 That concludes my comments and I'm available
13 to answer any questions that you might have.

14 COMMISSIONER BOYD: Mike, your last comment
15 about disincentives—

16 MR. MARSH: Yes.

17 COMMISSIONER BOYD: Can you elaborate on that
18 a little bit?

19 MR. MARSH: Sure. As long as you have-to tell
20 you the truth, perhaps we've seen this in the dairy
21 industry using—I'll attempt to analogize that to what we
22 see in the dairy industry. Historically the dairy
23 industry has had, as part of our federal dairy safety
24 net, we've had a dairy price support program and perhaps
25 because of the nature of the program itself, it has

1 provided a disincentive to a development of new products
2 for new customers in emerging markets. Because you end
3 up producing the type of product that the incentive or
4 the subsidy asked you to provide. In this case, one
5 would have to think with regard to ethanol that indeed
6 it's probably done the same thing there. That instead
7 of providing incentives for that next generation of
8 ethanol that we need in our country to meet the
9 renewable fuels standard, that instead it's probably
10 perhaps provided too much of an incentive for the corn
11 based ethanol production in the United States and too
12 little for the next generation.

13 COMMISSIONER BOYD: Any further questions?

14 Thank you, Mike.

15 MR. MARSH: Thank you.

16 MR. LONG: Good morning, Commissioner Boyd.

17 My name is Bryan Long. I'm the Vice President of
18 Procurement for Foster Poultry Farms. We're going to
19 flip flop the agenda a little bit between Michael and
20 myself.

21 Foster Poultry Farms is a family-owned and
22 operated, vertically integrated meat poultry production
23 and processing operation with a long history in
24 California. Foster Poultry Farms currently provides
25 12,500 well paying, well benefited jobs in California

1 and has severely economically depressed some. We run
2 about 17 percent unemployment in that region and we're
3 providing quite a few jobs, about 8,000, just in that
4 one area.

5 During the past two years, we've seen feed
6 cost skyrocket via the government mandates on ethanol
7 and biofuels. During that timeframes, we've seen our
8 profit margins shrink to record lows. We currently saw
9 an increase of about \$180 million in our cost during the
10 past 24 months. We are currently not making a profit.

11 A little bit about Foster Farms. It's kind of
12 a jewel right here in the valley. We're vertically
13 integrated. We have our own hatcheries. We have our
14 own feed mills. We have our own grower ranchers and we
15 have our own fleet. We do store-door delivery. It's
16 interesting that the cost pressures we're seeing are not
17 shared all the way across the board, I'll get into some
18 of that in a minute here. As a business we're here with
19 our ranchers. If you look here through the Valley, we
20 have about 200 ranches that we build from the ground up.
21 We house our own chickens there. We have our own staffs
22 that control those ranches. It's quite an amazing feat,
23 to have that in the middle of California. It's fun to
24 be here from industry just to talk about this.

25 Rather than going through all of the woes

1 we've had because of the corn price skyrocketing and the
2 future price of corn aren't looking good at all. I'm
3 going to talk a little bit about what Foster Farms is
4 doing on the flip side. On the flip side, our fleet—we
5 have 4,000 units in our fleet. It's the largest fleet
6 here in the State of California and from trucks to
7 trailers to farm tractors to forklifts and we've had to
8 struggle with that as far as compliance goes. I'm
9 supposed to be at another meeting across the way at the
10 Air Resource Board and I chose to come here but we're
11 talking about the new Youley True Filters. Foster Farms
12 has put two Youley True Filters on our units earlier
13 this year just to test with RIPOS and tried to get them
14 qualified. We get involved and we're pretty active with
15 that side of the business. The challenge on this
16 though, and I've shared this with Mary Nichols too, our
17 competition—you've seen the commercials hopefully—our
18 competition is not necessarily here within the State of
19 California. Our competition is coming in from out-of-
20 state. Some of the AB 32 rules have allowed our
21 competition to take a financial advantage, strategic
22 advantage, over us because their equipment does not have
23 to become 100 percent compliant. They can run their
24 newer trucks into the state. That's a competitive edge
25 for them. We understand that and I think CARB staff

1 understand that but that's just a challenge we have.
2 A fun thing we're looking at right now, we're
3 looking at a biofuel plant. We are the second largest
4 buyer of rice hulls in the State of California. Most
5 people don't know that. But when you go into one of our
6 chicken ranches, you'll see six inches of rice hulls
7 which is 20 percent of the rice itself. You have the
8 hull on the outside and then the rice kernel itself. We
9 use six inches of rice hulls as a bedding. It's
10 fantastic. It's very good for the birds and keep them
11 very healthy.

12 We take those rice hulls, after each flock,
13 and we take them to our manure plant and we actually
14 turn that manure and the rice hulls into fertilizer and
15 it's actually a very profitable business for us. Our
16 disposable is minimal.

17 One challenge we have, and I've been working
18 on it for almost four years, is our dead fowl. Every
19 chicken ranch will have about a two percent loss of
20 birds during the six-eight week period the birds grow.
21 Well today we take those birds to rendering and that
22 costs us close to \$2 million a year. We have been
23 working for about three to four years now on a project
24 to take those birds to a digester, clean up that gas and
25 then use that in our production facilities either as

1 electricity or as steam.

2 I've been to the UC Davis facility and seen
3 that operation and worked with those folks. The
4 challenge we have, and not to knock the gentlemen from
5 Siemens, but I get a call every week from somebody in
6 this industry and really the challenge is these guys
7 last 18 months and they're done. I think we're pretty
8 close. We have a feasibility meeting tomorrow morning.
9 We're going to be talking about next steps on our
10 project. We're really excited about it. We're very
11 proud of the fact that we have almost no waste coming
12 out of our facilities. We recycle everything. It's a
13 pretty neat thing. We're pretty proud of that.

14 We should be able to generate 3 megawatts a
15 day of electricity and waste heat from this system. It's
16 not cheap and I'm going to ask Michael to help me get
17 some grant money for this facility in the near future.

18 Touch on the business a little bit. From a
19 capital standpoint, we were spending up to anywhere from
20 \$60-90 million a year in capital improvements. We have
21 a buy California strategy. We went away from our steel
22 trusses, we have 60 foot wide chicken ranches, we were
23 buying steel trusses out of Texas. Well we invested
24 capital in a company in Turlock and now they build our
25 steel trusses here for us locally. It's worked out very

1 well for both them and us. Whereas we can get the
2 deliveries in a much more efficient manner and when they
3 need to modify certain things, they can come out and do
4 it much easier.

5 Really, I just wanted to touch those base
6 those things. I work for a great company. We can
7 complain, moan and groan about corn. It's just really
8 hurting us. Again, we're not making money. At the same
9 time of this conference, I think there are some great
10 things coming along with biofuels and we want to be a
11 part of that. I'm going to turn it over to Michael
12 Boccadoro.

13 SECRETARY ROSS: Thanks, Bryan.

14 MR. BOCCADORO: Good morning, Secretary Ross
15 and Commissioner Boyd. Michael Boccadoro on behalf of
16 the California Poultry Federation and today I'm going to
17 try and focus on some of the broader policy
18 recommendations we have going forward. We are very
19 appreciate of the two of you in particular have put in,
20 not just with this hearing today but with some of the
21 informal activities. I think it's really crucial that
22 we're getting all the various agencies involved in the
23 discussions because with the California and the work
24 that has been done has been done by Commissioner Boyd
25 having a biofuels strategy but we really need to get a

1 long-term vision for the biomethane, biofuel, biogas
2 industry in California and establish some goals and then
3 get the funding and the programs in place. Whether it's
4 energy purchase programs. Whether it's Public Goods
5 Charge funding for biomass and biogas. I don't think it
6 should be lost on anybody that we had \$90 million in
7 that bill that died over the next four years for
8 agricultural biogas and biomass that would have been a
9 huge jumpstart to this industry. We need to continue to
10 find a way to get that whether it's through legislation
11 or whether it's through the Public Utilities Commission.
12 That's critically important because we need that front
13 end capital infusion.

14 On the backend, we need policies coming out of
15 the Public Utilities Commission. We're at a point where
16 I feel very positive for the first time in a long time
17 that we're getting the attention that biomass, biogas,
18 biomethane deserves today and getting some programs in
19 place that can help it.

20 Let me just ask from a recommendations going
21 forward, we're not opposed to ethanol. You heard a lot
22 of concern from the dairy industry and the poultry
23 industry and I'm sure you'll hear some from the cattle
24 industry in a moment. Corn prices are killing us. I
25 like to say here in California we like our ethanol aged

1 in oak and cass not in fuel tanks. It's a challenge
2 going forward and so one of the concerns we have as we
3 move forward is that we have policies that compliment
4 California agriculture and not counterproductive. One
5 of the ones that we were concerned about which was
6 counterproduction was the CEPIP program and the
7 additional incentives that were being provided by the
8 Energy Commission through that program to corn based
9 ethanol here in California.

10 Corn ethanol has a trifecta of subsidies going
11 forward with the renewable fuel standard, the mandate,
12 the blenders credit that Mike Marsh touched upon and the
13 tariff preventing out of country ethanol coming into
14 California. They've got a trifecta. Adding an
15 additional subsidy to corn ethanol in California is
16 probably counterproductive given that it's competing
17 clearly with our industries. That's a very real
18 reality. Just this week it got announced that Fulton
19 Valley Farms, a longtime California chicken processing
20 operation, organic free range, announced that its
21 closing its doors at the end of the year. They
22 announced that just this week. They're a large, mid-
23 size central coast and central valley producer. With
24 that loss we're going to have 185 fewer jobs here in
25 California at the first of the year.

1 The impact of corn prices and feed costs on
2 the poultry industry in California are very real.
3 They're one of the smaller producers. They don't have
4 some of the advantages that you just heard from Foster
5 Farms in terms of being vertically integrated. They
6 don't own their own feed mills. So their costs are
7 going to be a bit higher. It's a real impact that we
8 can't lose sight of. As we move forward, we're very
9 pleased to hear that the Energy Commission is not
10 planning to further fund the CEPIP program here in
11 California and move away from further subsidy of corn
12 based ethanol and we strongly encourage that.

13 As we move forward, research into other types
14 of biofuels is critical whether it's dairy based as Mr.
15 Marsh commented on, we think that there's some real
16 positive benefits there. Cellulosic ethanol we can be
17 very supportive of that development moving forward.
18 We've got to find ways that compliment California ag and
19 don't work counterproductively. I can't keep saying
20 that point enough.

21 The point I made to Commissioner Boyd and
22 Commissioner Peterman earlier this week as part of their
23 biomethane workshop that they held at the Energy
24 Commission, it's real important as we move forward too,
25 we've got a lot of laws on the books now here in

1 California from an environmental perspective. Two big
2 ones, two aggressive ones. AB 32 and the RPS standard
3 in California. It's really important that as we move
4 forward with these programs that we coordinate some of
5 these activities more closely so that we're achieving
6 multiple goals with the programs that we create. The
7 biomethane workshop had one person describe it to me as
8 a little bit of a pep rally for out-of-state biomethane
9 producers. Because most of the biomethane that's being
10 purchased by utilities here in California are coming in
11 from out-of-state and we need to find ways to get the
12 biomethane industry here in California competitive and
13 functional so that we can be providing tremendous
14 resources to the utilities. They clearly want them.

15 There was a lot of not just the investor owned
16 utilities but the municipal owned utilities at that
17 hearing. The most important piece to remember is that
18 with these two hugely aggressive environmental programs,
19 they've come with the promise of California jobs, green
20 jobs. This Governor has made a tremendous point about
21 that.

22 If we're merely encouraging industries in
23 other states and not here in our own state, I'm not sure
24 we're accomplishing what the ratepayers who are paying
25 for these programs and what the taxpayers who are paying

1 for these programs and the businesses in California who
2 are paying for these programs are hoping to accomplish.
3 We need to make sure that we get the jobs here in
4 California and so I think it's really important that we
5 move forward in a complimentary fashion with our funding
6 for these programs going forward.

7 So with that, I'll be happy to answer any
8 specific questions that you guys may have as we move
9 forward with the panel.

10 MR. DICKSON: Thank you. My name is Doug
11 Dickson and I'm the Director of Commodities for Harris
12 Ranch and Harris Feeding Company down in Coalinga,
13 California.

14 I want to thank the CDFA and the Energy
15 Commission for inviting me to speak today. What I'm
16 going to do, I have a fairly narrow focus on the
17 biofuels industry in terms of how it relates to the
18 cattle industry. But to do that, I kind of need to give
19 you my background a little bit.

20 I'm a California native and after graduating
21 from UC Davis in 1975, I went to work for Cargill as a
22 grain buyer and started buying grain from the farmers in
23 the Central Valley on the hood of my pickup. Six years
24 as a grain merchant, 15 years in the poultry feed
25 business on the grain organization side, eight years in

1 the dairy feed business, four years in the ethanol
2 business and finally two years in the cattle feed
3 business. All here in California.

4 So I have a pretty good understanding of the
5 challenging of operating in a feed business in the
6 destination market which is what we have here in
7 California. Because of the high cost of feed which has
8 already been mentioned, we've had to be innovators are
9 here in California to survive, some really big
10 innovations - for one, the tray pack which was innovated
11 in California which helped value add to the poultry
12 market here in California. The TMR feeding on dairies.
13 It was innovative back in the last 70s to change the
14 dynamic and increase the size of dairies and the
15 efficiencies of dairies so they could survive.

16 Whenever you haul feed to the livestock
17 instead of hauling the livestock to the feed, you have
18 more cost in hauling the feed to the livestock. So
19 we've had to been really innovative in California in
20 terms of our feeding programs and just how we look at
21 the business.

22 You can see from my perceptive, my objective
23 or my perspective over the last 35 years has been how to
24 lower the cost and be more productive in feeding
25 livestock and poultry in California, specifically

1 livestock.

2 This is where I want to talk about co-products
3 and how—we've talked a lot about grain price, we've
4 talked a lot about how the DGD fits in and what else
5 fits in—I want to talk about the boots on the ground and
6 what we're actually doing.

7 I've got some numbers up here, since I'm a
8 corn guy, pretty much, you can Google how much corn is
9 consumed in California and you'll get about 20 million
10 hits and none of them are going to tell you. The
11 reason is because of how it's utilized in different
12 areas, the consumption rates, those kind of things but I
13 wanted to put this up here because I get a lot of people
14 ask me this. In terms of—at the top here, this is the
15 consumption side. Broilers are consuming 1 million tons
16 of corn in the State of California. Turkey 642,000.
17 Layers 540. The total poultry industry is consuming 2.1
18 million tons. Beef cattle are consuming 711,000 tons.
19 The dairy industry of course is the big boy, 4.9 almost
20 5 million tons. Total feed consumption in the state of
21 California is 7.8 million tons. As an importer, I think
22 we would be second behind Mexico in terms of if we were
23 an importing country.

24 We're talking about China right now maybe
25 importing 4 million tons and that's affecting world

1 price of China. You can see that we're consuming in
2 this state, in the feed side, 7.8 million. 150 million
3 gallons of ethanol right now in California is consuming
4 1.5 million tons of corn. The poultry industry as a
5 percent of total consumption is 23 percent. The dairy
6 feed industry, of course the largest, is 61. Ethanol
7 and I calculated the percent of netback on the DGD
8 replacement and I'll go through that on the next slide
9 because what we've done is tried to use the synergies
10 that we've seen in the biofuels business as well as the
11 feed business.

12 Corn price is high. I mean, it's affecting
13 everybody. The unfortunate thing is I think if we took
14 the biofuel business out of California, it's not going
15 to change the corn price. As a California feeder, I've
16 got to look at what we can do here in California.

17 Next slide is over. I wanted to look at WDG
18 and how much is produced. The three plants in
19 California are producing 1.3 million tons of wet
20 distiller's grain. The reason that it has a smaller
21 carbon footprint is that it's not dry. It comes out of
22 the back of the plant and it's about 180 degrees and
23 it's about 65 percent water in moisture, it's hot and
24 steamy oatmeal is what it looks like. Only it's a
25 yellow color.

1 That is—if you calculate that back to a dry
2 matter basis, that goes in and looking at dairy rations
3 and cattle rations, it goes into replace 565,000 tons of
4 corn consumer in California and on the dairy and cattle
5 side. Corn equivalent as a percentage of dairy
6 consumption is about 11 percent so that 560,000 tons of
7 corn equivalents from the wet distillers' grain is being
8 produced at 11 percent of the total dairy consumption.

9 Just to give you an idea, and I know it was
10 mentioned earlier, California corn production last year
11 we produced 928,000 tons of grain corn. That was only
12 180,000 acres. I put the corn silo up there just to
13 give you an idea. We actually produced—we planted 2.5
14 times more corn for silo than we did for grain. But the
15 percentage of California corn production versus use is
16 only 9.9 or basically 10 percent. When we talk about
17 being a deficit state, we're definitely a deficit state.

18 Here's another fact to put up there.
19 California consumption as a percent of total U.S.
20 production is 2.7 percent.

21 What I want to do is talk a little bit about
22 what the impact of this is. I'll use the dairy example
23 because my boss wouldn't let me talk specifically about
24 the savings of Harris Ranch and eating the co-product so
25 I'm going to use a basic general example and I need to

1 take issue with the comment about taking the energy out.
2 When they take the starch out but the other part of the
3 energy is the fat, lipid oil, corn oil, which is an
4 energy. You take the starch out but you multiply the
5 corn oil content by 3 times. Looking at that, all I
6 know is what is actually going out to dairies. I was in
7 the dairy feed business for seven or eight years and I
8 talked to a lot of dairy interests before I put this
9 together to see if my numbers were correct and they were
10 all up.

11 Total dairy cows, I got this off of NASS'
12 website yesterday, 2009, I know we've talked about 1.7-2
13 million. I think this is the number of milk cows in the
14 state of California as of 2009, about 8.2 million.

15 We produced, from the previous slide, 1.3
16 million tons of wet distillers grain. The average per
17 cow, per head, per day is 50 pounds out there right now.
18 So a dairy cow consumes 2.73 pounds at the standard
19 dairy ration. The number of cows eating wet distillers
20 grain in the state of California right now is 503,000.
21 That's 27 percent of the total dairy herd population.

22 The standard replacement is for corn in the
23 diet and I've been involved with looking at lot of least
24 cost formulas for dairy reactions. There's a little bit
25 of protein taken out, a little bit of cotton seed but it

1 primarily replaces corn in the diet.

2 Five pounds of corn is replaced by 15 pounds
3 of wet distillers grain. Let me tell you that the
4 distiller's grain is trading at—I put 80 percent up
5 there. Today it's 72 percent of corn. It replaces corn
6 in the diet and you don't see a difference in
7 production. I'm calculating a 15 cents per head per day
8 savings in a dairy cow.

9 Total savings for wet distillers on a daily
10 basis is 75,000. If you run that annually, that's \$27
11 million is being saved by cattle in California eating
12 wet distillers grain.

13 The other thing, and that's a \$54 per head
14 savings per cow, the other thing that we've noticed is
15 the co-product. We utilize more of the soluble fraction
16 which we call liquid corn and it's used to condition
17 feed. The dairies that are using it now and we use it
18 at the feed yard has enable us to increase the level of
19 straw or lower quality fiber in the diets. Right now
20 we're feeding up to 50 percent straw. We tried that
21 before and it wouldn't work. The cattle sorted the
22 straw out. But if you condition it with the wet
23 distiller's grain or the soluble, the cattle will eat
24 it.

25 We've dropped our feed costs on the hay side,

1 at the feed yard, by 30 percent by utilizing the co-
2 products.

3 Because of the high oil content in the co-
4 products that we're feeding, we've almost eliminated
5 tallow in the diet at the feed yard. What's that done
6 is we're selling tallow now. So one of the things that
7 we've looked at internally is putting a biodiesel plant
8 at the rendering facility where we're having our tallow
9 rendered instead of having the tallow running it through
10 the biodiesel facility and running it through our 110
11 trucks on the road right now. That's one of the things
12 that we're looking at. The interesting thing is that,
13 and I'm of course myopic in my view of all this because
14 I'm a corn guy and I've been trading corn for 35 years.
15 All of it in California but as a destination.

16 I see the corn coming in, Harris actually buys
17 all the corn for Pacific Ethanol. We've felt that from
18 our perspective that if we could coordinate efforts and
19 we could bring the grains in and take the starch out,
20 run the co-products back through the feed yard and then
21 have the--utilize the fat in the corn oil from the co-
22 products and not have to use tallow, we can run this
23 full circle of integrating the current program which is
24 basically the most efficient right now. That's one of
25 the things that we've been capitalizing right now to

1 pool the demand.

2 Frankly, we're a small group out here in

3 California. We produce a lot of food for the nation but

4 it's really a small group. There's probably less than

5 10 people in the country that handle 90 percent of the

6 corn that's traded in this country. California has

7 always been a very, very strong participant at the table

8 of the national grain and the international grain

9 merchandisers. We go to Switzerland for the world grain

10 conference. We're always at the Nebraska Corn Growers

11 Association as they invite us out to speak. Because we

12 consumer 9 million tons of corn we're a large player but

13 we have to stay together. From our perspective having-

14 fortunately on the dairy side, on the dairy and the

15 cattle side, we've been able to utilize these co-

16 products. We're getting to the point and the science

17 and technology is coming for the poultry guys to start

18 taking more of it. It's coming. It's slow. There's

19 also been a lot of hesitation because it's kind of a

20 political topic. That's coming. But for us it's

21 enabled us to utilized more California feeds. We're

22 feeding way more wheat than we would otherwise because

23 we've got the corn oil coming in on the CD-we're feeding

24 30-40 percent California grown wheat this year versus

25 last year that corn was imported as Midwest corn.

1 The point being having the ethanol business
2 here, producing products that we can use, has enabled us
3 to buy more California products at the feed yard. With
4 that, I thank you very much. Do you have any questions?

5 COMMISSIONER BOYD: I have no questions.
6 Thank you. But I appreciate your recognition. Since
7 you're the last panelist, I'll make a comment at this
8 point in time that I have to tell the fowl feed people
9 that I had to follow their trail through the capital
10 this last time around correcting a lot of misstatements
11 about what the CEPIP program was but nonetheless CEPIP
12 is gone.

13 My observation of all this issue, and the last
14 gentleman kind of said it, is that I think there is a
15 legitimate grievance about ethanol versus corn but to me
16 it's a product of the RFS. It's federal policy. It's
17 not state policy. So as the state tried to work around
18 it, and as the last gentleman indicated, we have to
19 figure out some kind of state solution. By eliminating
20 California produced ethanol, it didn't make one bit of
21 difference to what's happening to the price of corn. Of
22 course you heard earlier today that as a nation now
23 we're shipping ethanol now out of the country so
24 somebody now is making a whole bunch of ethanol that we
25 can't consume internally and shipping it somewhere else.

1 Some of you are paying the price, I must admit. You're
2 catching it in terms of the price of corn for feed and
3 therefore--and the price of food to a lesser degree and
4 that is a dilemma and that probably is part of the
5 reason that the Secretary and I have talked for months
6 and months and months about having this session to talk
7 more. We were a little bit with a lot of attempts to
8 try to save the ranch so to speak or something across
9 the street, the Public Goods Charge, the PIER program
10 and the reputation of the Energy Commission.

11 In any event we're going to say something
12 about this in our soon to be released later this year
13 Transportation chapter of the Integrated Energy Policy
14 Report which is something the Commission produces every
15 two years. We're going to say something about the fact
16 that based on our projections of the requirement on
17 California to utilize as transportation fuel ethanol, in
18 order to do that, the staff kind of back capped this--
19 well, how much gasoline are we going to sell, how much
20 ethanol did you put in that gasoline, that will chew up
21 some of our requirement. And then what else is there?
22 The only other use of ethanol as a fuel is so-called
23 E85. I don't see that we even have the potential to use
24 all of that ethanol. We're going to be raising a
25 question about the renewable fuel standard and whether

1 it makes any sense in California.

2 The sad part of all of this is that you heard
3 about the low-carbon fuel standard. California produced
4 ethanol has a better carbon index than ethanol produced
5 anywhere else and would be good for California to use
6 that ethanol in its transportation fuel rather than the
7 corn ethanol. The way the Air Board has the system set
8 up is that in just a few short years, California ethanol
9 virtually made out of the state, won't even comply with
10 the carbon index. What are they talking about? What
11 other ethanol in the whole world has a pretty decent
12 carbon index? It's from Brazil made of sure.

13 I predict, as I go out the door, that there's
14 going to be an incredible amount of ethanol shuffling.
15 U.S. produced corn ethanol is going to be going to
16 Brazil and Brazilian ethanol is going to be coming to
17 California and the Brazilian's aren't stupid. They're
18 going price it really high because we're going to
19 produce a huge demand for it in this state because
20 refiners have no choice but to put that ethanol into
21 their gasoline to meet the low-carbon fuel standard. In
22 the meantime, they'll buy cheap U.S. corn ethanol to
23 meet their very heavy need for ethanol as a country
24 because that's a principal fuel.

25 So something is wrong with that picture but

1 I'm running out of years to address it but maybe you all
2 can work on it. Anyway, that's way we need, as I've
3 heard here, so far, more of us talking around more
4 tables about the system and how all of these pieces fit
5 together. As a fourth generation Californian, I'm on
6 your side as the son of a large animal veterinarian.
7 I'm on your side in terms of doing something for
8 California agriculture. We really need to work more
9 together to do that. So hopefully you all can proceed
10 to do that in the future. Anyway, enough said by me.
11 We should see if there are any people in the audience
12 who have questions for this group before we go to the
13 next one?

14 SECRETARY ROSS: Thanks.

15 COMMISSIONER BOYD: Next panel.

16 MR. RILLERA: I'd like to invite the Biofuel
17 Panel up.

18 MR. KOEHLER: Chairman Boyd. Secretary Ross.
19 Thank you very much for putting this together. This is
20 already, I think, a very productive conversation and a
21 lot of information exchanged. This is a critically
22 important effort and opportunity to get everybody
23 talking together because we are together when you talk
24 about the biofuels industry and the agriculture
25 industry, we're one and the same.

1 On sort of a global basis, there was a time
2 for more of the time until we found that liquid gold
3 called oil where agriculture produced all of the food,
4 the feed, the fiber and the fuel for this country and
5 the world. We've had a little excursion with the
6 petroleum blip which will be a blip, we'll have to find
7 replacements for that. We won't be going back to
8 growing hay as the fuel. It will be the use of science
9 and technology as we've been hearing in new fuels. But
10 if we can't bring fuel back to the farm through
11 agriculture and what the ethanol industry has done in
12 the United States has been an incredibly successful
13 model of how to do that, than we will have a problem
14 sustaining a future.

15 I'm Neil Koehler, Pacific Ethanol but I'm here
16 today resenting a newly formed group called the
17 California Advanced Fuel Coalition. We are working with
18 not only the exiting biofuel producers but the future
19 biofuel producers in the state of California, vendors,
20 suppliers to that industry, labor unions because it
21 takes all of us to have produced the fuel in the ground
22 that we've gone today that the four ethanol plants,
23 three of which are running today, but we are absolutely
24 the platform and the future for the new technology. We
25 want to make sure that we had a voice that wasn't just

1 corn ethanol here in California but was really what this
2 industry represents which is the vanguard. The ethanol
3 produced in California today is the most advanced,
4 commercially available biofuel in the United States
5 today. That was mentioned about the lower carbon
6 intensity, wet distillers grain as the cleaner source of
7 electricity in California, corn oil extraction, other
8 initiatives in the conventional process that every
9 producer here is making.

10 We're also all very engaged with any number of
11 initiatives to develop the new cellulosic technology.
12 Other chemicals from ethanol. Using the existing
13 infrastructure because that's a very valuable and
14 important opportunity to leverage that. We think that
15 that is a very good and real opportunity and is not a
16 bridge to these new technologies, it is really the
17 bridge. At some point we'll see greenfield, cellulose
18 ethanol plants and we'll also see other conventional
19 plants. You'll hear from David Rubenstein on sugar cane
20 and so we're already diversifying the feedstock,
21 diversifying the technologies and it's all about a
22 coherent policy that we've had at the federal level and
23 more of late in the last couple of years at the state
24 level which becomes critical to sustaining this
25 opportunity.

1 We've heard a lot about high corn prices. I
2 think the studies have shown that while ethanol use has
3 been a contributor, it's a small contributor. There's
4 plenty of other factors at work. We see, obviously,
5 high commodity prices in all, not just the agricultural
6 commodities but the precious metals so this is not
7 something that is specific to corn.

8 The one thing that is specific to corn and the
9 ag commodities that what we've seen a result of high
10 commodity prices is an incredibly vibrant, positive
11 agricultural economy. That's lost on a lot of people.
12 There's complaints about the poultry economy, everybody
13 else complaining about their inputs. We're all part of
14 an agricultural system that's doing exceedingly well in
15 a time when so many industries, so many countries,
16 states, California we're all looking for jobs and new
17 industry. Here we have in the state of California a
18 national, agricultural economy that is doing so well and
19 can help us leverage that into new businesses. New
20 jobs. New economic development.

21 In terms of my remarks because they'll be some
22 specific comments on other projects, it is really
23 addressing some of the larger issues on the policy
24 front. We do need integrated policies. At the federal
25 level, we have an ethanol industry because of the

1 blenders credit and the renewable fuel standard.

2 The blenders credit is due to expire at the
3 end of this year. The ethanol industry, we were
4 actually one of the first companies to say it has served
5 its purpose. We're not 10 percent of the gasoline
6 supply in the United States. No other fuel has come
7 anywhere close to making that kind of petroleum
8 displacement. It's done its job.

9 The fuel is very cost competitive. It's
10 typically lost expensive than gasoline even without the
11 blenders credit and we can do our part to help close the
12 federal budget deficit, let's let that expire. The
13 renewable fuel standard is the real driver. It is 15
14 billion gallons of corn based, conventional ethanol and
15 then another 21 billion gallons of something else.
16 That's where the opportunity is in California. Lots of
17 noise and chatter about the RFS. The corn ethanol is 15
18 billion gallons, we're almost at 14 billion today.
19 There's another billion as a mandated requirement.
20 That's pretty much in the system in terms of plants that
21 either shut down like the one here in California,
22 Madera, or other construction so it's pretty much there.
23 Now it's all about where do we go from here?
24 How do we get to that 36 billion gallons which will keep
25 that billion dollars a day that we're sending overseas

1 right here in reinvestment and in our rural economies
2 here in the state of California and elsewhere in the
3 country. So the RFS is critical.

4 Commissioner Boyd, I appreciate your comments
5 about the RFS and how that's configured. Probably there
6 are some appropriate adjustments as to how that rolls
7 out but it's that long term policy that sends a signal
8 to companies like ours, industries like ours, the
9 capital markets that we are going to have these fuels so
10 let's start investing in them. It's critically
11 important as a policy that doesn't cost taxpayers
12 anything; in fact, it saves them a tremendous amount of
13 money by keeping those dollars at home and reinvesting
14 it.

15 We've seen that with the existing industry.
16 It's not a zero sum game. The fact that ethanol has
17 grown to not using 42 percent of the corn crop suggests
18 that maybe one of those things that maybe you had to
19 correct in the legislature but in the net basis I
20 thought there was a very good presentation from Doug
21 Dickson about the integration and the feed. When you
22 take out the feed, it's 25 percent of the corn crop.

23 If you look at the 300 percent of productivity
24 in 60 years on corn production, we've actually produced
25 more corn on the same acreage, more corn than was needed

1 to produce that 13.5 billion gallons of ethanol that we
2 will produce this year.

3 It is the price signal. It is the policy that
4 sent a message to private industry, in this case the
5 American farmer to produce and to produce, to produce,
6 to produce. And then the industry to have markets for
7 that product. Our problem with that agricultural
8 production is historically not not enough. It's too
9 much. It's surpluses. The ethanol industry has been a
10 critical part of diversifying the markets and giving
11 farmers an opportunity to sell their products at a price
12 where they can afford to make a fair wage, a fair living
13 and the taxpayers with billions of dollars of taxpayer
14 support is now not going to farmers because of those
15 price signals and that's very good.

16 Federal policy has made it happen. We're
17 here. The next step is how do we get to the advanced
18 biofuels. That's the real opportunity in California.
19 We will probably not build any more corn ethanol plants
20 in the state of California. They're a relatively small
21 part of the energy picture here but critically important
22 to that platform to get us to the advanced biofuels. I
23 said we're all working to do that.

24 California actually has a very well integrated
25 policy framework to help make that happen. We have the

1 Bioenergy Plan that says 20 percent of the instate
2 biofuels should be California produced by 2010. We're
3 not there but we're 12 percent. We actually have made a
4 reasonable achievement but we can do better, we can do
5 more. It's 40 percent by 2020 and 75 percent by 2050.
6 Pretty aggressive goals.

7 The low-carbon fuel standard. We've had a
8 fair amount of conversation about that. A 10 percent
9 reduction of carbon intensity backloaded. That's a huge
10 objective that we're going to have to get to those
11 advanced biofuels or what Commissioner Boyd, you're
12 talking about shuffling which incidentally is happening
13 today. The boat from Brazil showed up in California
14 this week. It's probably offloading in Northern
15 California today. It costs about \$1.25 gallon more to
16 bring it to California so that they can get advanced
17 biofuel credits and double down on low-carbon fuel
18 standards. I don't think that's really the objective of
19 those policies. It's certainly going to hurt consumers
20 in California and will hurt efforts to build an
21 industry.

22 We need to address those issues. That's a
23 whole series of workshops of its own but we need to look
24 at those unintended consequences and strange market
25 reactions to that. The low-carbon fuel standard is a

1 real driver to help move that.

2 The state program, the CEPIP, yes, it's gone
3 now. We thought it was a very good program to help
4 insulate the California new industry, undercapitalized.
5 We still think it was a good program and we still think
6 it should be funded. If we can rally around the low-
7 carbon fuel standard and make sure that we're protecting
8 California industry and sending the right signals, we
9 will get a premium price for our product. We've gotten
10 a small premium this year, in the first year of the low-
11 carbon standard, that should be quite a bit larger in
12 subsequent years. That's where we need to stay
13 consistent with that.

14 We have the State Alternative Fuels Plan of
15 2007 which was reducing petroleum dependence by 15
16 percent by 2020. We haven't done that but we've made
17 some progress. Virtually all of that progress has been
18 due to ethanol use in the state of California. AB 32
19 climate change, all of these is integrated. They're all
20 actually consistent and very coherent.

21 AB 118 is the funding to help realize these
22 goals. It's a noble effort. I know that there's been
23 some criticisms of it, about how the money's been spent.
24 I think the Energy Commission has done a very laudable
25 job of directing those funds and certainly, we're there

1 to help support that program and try to build those
2 advanced biofuels. They are more expensive. They are
3 going to take policies that send the right pricing
4 signal and some seed investment dollars and that's what
5 AB 118 can do to make that happen.

6 With all of this, we need close, collaboration
7 between all stakeholders. It's government. It's
8 private industries. It's why this is such a good
9 effort, bringing us together, bringing industries,
10 summon the feed industries who haven't always been
11 supportive of the ethanol. Let's figure out how to work
12 together because we're in this together. We're your
13 suppliers of very high quality, low cost feed. It's the
14 university system. We need the science and exploration
15 and development of these new technologies.

16 The agronomists, there's increasingly more
17 focus—we talk about waste and, well, waste is nice but
18 how do we collect it, how do we get it on marginal
19 lands. Maybe there are some opportunities on the
20 purpose crops but it really needs to be a focus. As an
21 industry, we have companies in our group that are
22 working on some brand sweet potatoes that are 25 percent
23 starch on them and as is matter basis, 75 percent
24 starch. We can grow those in California. They're
25 working on sugar cane in imperial valley. There's

1 actually an interim step to the more advanced cellulose
2 technology of using existing starch and sugar crops that
3 we actually can grow in the state of California to meet
4 our objectives but we all have to work very closely
5 together to make that happen.

6 As I said, we've seen this in all of our
7 plants. We're working on biomass cogeneration in
8 Stockton to lower our carbon footprint further, lower
9 our energy costs. We've paid a lot for energy relative
10 to our Midwest competitors. That's recognizing an
11 objective of lowering the cost and lowering the carbon
12 intensity.

13 AE Biofuels has a company that they purchased
14 that has cellulose and the ability to turn starch into
15 other chemicals such as a rubber replacement. They're
16 doing the methane digestion. The beautiful, full circle
17 project in Pixley at Calgren. They, through Energy
18 Commission support, are putting a digester in to
19 pipeline manure into a digester that will produce the
20 methane to fuel the ethanol plant that will produce the
21 feed to go back to the dairies to produce the manure to
22 go back to the ethanol plant.

23 These are all incredibly positive and valuable
24 developments and, again, we're all working together to
25 make it happen.

1 In terms of what needs to be done, this
2 opportunity today in my mind represents something that
3 is big, if not bigger, than the dot com development in
4 California in the last generation. The cleantech, bio
5 energy development in the state of California, focused
6 in the Central Valley of California but not exclusively,
7 where the jobs, economic development and investment are
8 most needed. This is an absolutely huge opportunity
9 that we cannot use sight of and can't take our eye off
10 the ball to make it happen; to bring those jobs, that
11 economic development, clean energy, energy dependence.
12 All the things, the goals that come together as part of
13 this.

14 We need continued financial support, in
15 recognizing limited budgets it's not a lot but that seed
16 money that help gets these innovative projects off the
17 ground and then continue to be consistent, coherent, if
18 we need to make changes but let's keep those policies
19 out there that are longer term. The renewable fuel
20 standard that says yes, all the new incremental biofuels
21 has to be something other than the conventional to meet
22 the requirement. The low-carbon fuel standard which is
23 driving that innovation. So there's lawsuits, there's
24 concerns about indirect land use. Let's clarify all
25 that and let's move forward so we know what the rules of

1 the game are because that's the only way that the
2 capital is going to come in and take the risk.

3 We need to reconfigure the predictive model
4 and the gasoline regulations at the California Air
5 Resources Board. E15 has been approved by the EPA for
6 the newer vehicles. There is an absolutely need to be
7 able to take in the volume from the renewable fuel
8 standard to have the access to higher level blends.
9 It's not going to be all the E85.

10 We need to start working today because it
11 takes some time to reconfigure the regulations to allow,
12 to optimize the predictive model around 15 percent
13 ethanol blends. That is very, very important. I've had
14 conversations with Mary Nichols about that and others at
15 the Air Board and it's something that given that time
16 lag, I think that all of us as stakeholders and fellow
17 agencies need to start pushing on that.

18 We need to require that new cars sold in
19 California—California has the luxury of being able to
20 tell car companies, just as we do with emission
21 regulations, on what kind of cars are sold in
22 California. If every car sold in California, just as
23 they are in Brazil, if California could take this
24 initiative and say all new cars sold in the state,
25 starting date certain will be flex fueled. It would

1 cost the car companies less than \$100, probably less
2 than \$50 today to do that. We could then have ethanol
3 from the Siemens process, ethanol gasoline, any
4 combination of cars, truly flexible fueled vehicles.

5 We talked about mandates for ethanol. The
6 real mandate is petroleum. We all know that. The
7 renewable fuel standard has given access to something
8 other than petroleum. We've got a small bit ahead by
9 being a few percentage points but we've got to open the
10 market. There has to be access to the market for these
11 new fuels. These are the kind of initiatives that would
12 make them happen. E85, blender pumps, all of this--there
13 are California regulations that need to be adopted to
14 make that happen.

15 We need to be clear about this and ultimately
16 we need to, Commissioner Boyd we appreciate your efforts
17 in doing this because that has been so much
18 misinformation about ethanol and what it is and what it
19 isn't, we have to stand up for the truth. When things
20 are said that aren't true about our fuel and about the
21 opportunities, we all need to collectively to have the
22 courage and the strength to say, "No. That's wrong.
23 This is what is really going on. This is the
24 opportunity. And it's one heck of a positive and bright
25 future for the state of California with biofuels and

1 bioenergy." Thank you.

2 MR. HUTTON: Morning, Secretary and
3 Commissioner. My name is Matt Hutton. I'm here
4 representing California Polytechnic State University in
5 San Luis Obispo where I'm a member of the Algae Research
6 Group. So I'll talk to you a little bit today about
7 what we do there and then the state of the industry in
8 California.

9 So it's a pretty big research group, as
10 university groups go, it's 30 people right now led by
11 Dr. Trig Lundquist who some of you may know.

12 Here's a little bit of background on algae.
13 It's probably the most productive biomass that we'll
14 discuss today. Up to 70 tons per acre per year which is
15 maybe 10-15 times as productive as corn. Of course,
16 there are corollaries to that statement. It's quite a
17 bit of capital investment to get more growth, capacity
18 for algae growth in the state of California.

19 Between 1-5,000 gallons of that biomass per
20 year could be oil. There are several options for
21 converting algae biomass into fuel. Some of them more
22 readily commercializable in the short term and others
23 that require longer terms research efforts. Things like
24 biogas and gasification could be deployed really near
25 term, maybe potentially even tomorrow for biogas.

1 There's more research required to commercialize algae
2 oil.

3 In the meantime while these research efforts
4 are underway, there are co-products that can lower the
5 fuel costs of algae, fuel production, things like
6 wastewater treatment which is particular applicable to
7 the agricultural industry of California and especially
8 the Central Valley where algae can be used to treat
9 subsurface ag drainage and also just municipal
10 wastewater throughout the rest of the state. It can fix
11 about 5,400 hundred pounds per acre year of nitrogen
12 which is really a big potential benefit to the
13 agricultural industry here.

14 While growing that biomass, algae can also
15 produce other higher value products that might help the
16 industry get over that hump to a longer term
17 commercialization of algae for biofuels use. Things
18 like fatty acids, omega 3 fatty acids that can be used
19 in nutritional supplements. Algae also can grow about
20 13 tons per acre year of crude protein which can be used
21 as an animal feed.

22 One of the things that really recommends algae
23 as a feedstock for biofuels is that it completely avoids
24 the fuel versus food dilemma or it can because it can be
25 grown on non-variable land with low quality water and

1 waste nutrients. We also have an existing
2 infrastructure herein the state of California with full
3 scale wastewater treatment ponds operating with algae
4 since the late 60s.

5 That's what these look like. Most of these
6 pictures are from the state of California. When I bring
7 up ponds, this is what I'm talking about, just big
8 shallow, algae growth containers, basically.

9 A couple of different ways algae can be used
10 to produce fuel. Two of these are gaseous, two of these
11 are liquid. Ignore the complicated box and the arrow
12 diagram. I'd like to focus just on digestion, anaerobic
13 digestion and oil extraction. All the way to the right
14 of this graph here you can see the digestion pathway
15 which might be expected to produce about 250,000 cubic
16 feet of methane per acre per year of algae growth ponds
17 and also a potential for 1-5,000 gallons per acre year
18 of oil as I mentioned earlier.

19 So talking about oil, a friend from the CEC
20 emailed me a couple weeks ago and posed this question, a
21 casual question, about what it would take to get algae
22 oil to replace a significant portion of the fuel that we
23 consumer in the United States. We used about 300
24 billion gallons per year of petroleum products in the
25 United States. A recent report from one of the national

1 labs, Pacific Northwest National Laboratory, estimated
2 that there are about 100 million acres of noncompetitive
3 land that could be used for algae growth in the United
4 States. If we wanted to satisfy the entire demand using
5 that available land, it would require that our algae
6 growth ponds produced about 3,000 gallons of oil per
7 acre year. She asked if this is a reasonable thing, to
8 expect algae to do that? To which my response was the
9 productivity is not out of the question. 3,000 gallons
10 per acre year is definitely possible with algae.

11 Whether or not that can be conducted over 100 million
12 acres is an entirely different question. That would be
13 pretty impractical. And that's fine because no fuel
14 could really replace everything petroleum has done for
15 us up to this point, that would require alcohol fuels,
16 gaseous fuels as well as oils.

17 I said to her let's look at this in a slightly
18 different way and say, "What's the component of the fuel
19 consumption in the United States that's most firmly
20 entrenched?" In other words what application that we
21 consumer fuel for really requires oil and can't be
22 switched over to an alcohol fuel and that's aviation.

23 We consumer about 12,600 million gallons of
24 oil in the aviation industry in the United States in
25 2008. So at a productivity rate of 3,000 gallons per

1 acre year, we would only require 4.2 million acres to
2 grow enough algae to satisfy that entire demand. Much
3 less daunting, especially given the fact that here in
4 California alone we have 400,000 acres, give or take, of
5 salinized land in the San Joaquin Valley region and even
6 more in Salton Sea region. It's difficult to use for
7 anything else so there might be a good spot to grow
8 algae.

9 If we're going to do that, what would be some
10 of the technical challenges that we would face? Always,
11 always, always growing more oil per acre improves the
12 economics of the entire thing and the solutions to that
13 challenge are really things that just require basic,
14 basic research like controlling pests in algae growth
15 ponds which there's research underway in the state of
16 California right now on and also genetic modification of
17 algae which is a much longer term, I think, potential
18 solution. Also, harvesting algae requires a lot of
19 energy. We're researching right now at Cal Poly
20 bioflocculation and settling of algae which is kind of
21 getting algae to harvest themselves in a way. That
22 effort has been successful thus far and continues right
23 now under CEC funded grants. Also filtration is a
24 potential harvesting mechanism.

25 Another challenge is dewatering algae. In

1 order to use it as a fuel or a feed, it's important for
2 a lot of applications that algae is completely dewater
3 which consumes a ton of energy. There are new screw
4 press technologies kind of in the pipeline right now
5 that are being piloted in the state that could help with
6 that and also solar drying I think could play a big
7 role.

8 Oil extraction with less energy that's big
9 challenge. That takes chemicals and lots of energy to
10 get the oil out of algae since they have tough cell
11 walls but some potential solutions there, super critical
12 CO2 extraction like the technology that's used in
13 decaffeinating coffee or defatting milk, for example. A
14 lot of the time or hot oil extraction. Both of those
15 are being researched in the state right now too.

16 Given that those challenges are absolved, what
17 would be the biggest market challenge is that at this
18 point and I think the biggest immediate challenge would
19 be the economy as a scale. Right now there are
20 extraction plants in the United States that can process
21 oil seeds and get tons of oil throughputs per day.
22 They're a little bit larger, I think, than might be
23 practical in the algae, biofuels industry in the near-
24 term. A recent report that we conducted estimated that
25 it would require 1,000 acres of algae growth to make a

1 conventionally sized extraction plan to pencil out
2 financially.

3 Development of small scale extraction
4 technology and just small scale technology in general to
5 kind of decentralize bits and pieces of this industry
6 and reduce transportation costs would really be a big
7 benefit to the development of the fuels. Then also
8 collocation of resources. At least I go to a lot of
9 conferences where people throw out numbers and say, "Oh
10 we've got so much waste CO2 here in the United States.
11 We can use it all to grow algae." Well, you really
12 can't. Believe it or not it's really hard to get it to
13 one place, especially if that place also has a
14 requirement of flatland so that's a big issue.

15 Just to bottom-line this for everyone, in the
16 same report we estimated that, with no co-products being
17 produced with the algae, that we could produce oil at
18 about \$300 a barrel in the near term. That's relatively
19 close, 5 years or something like that. And \$225 a
20 barrel, a little more toward the mid-term. Now if co-
21 products were taken advantage of, say wastewater
22 treatment or there was some revenue from animal feed
23 being produced along with this biomass, you could bring
24 the cost of a barrel produced using algae down to
25 potentially around \$30 a barrel which is much better.

1 Okay. I was asked to prepare a little bit
2 about the landscape of the industry here in California.
3 These, really crudely by the scale of their funding, are
4 companies that I've decided to talk a little bit about.
5 Solazyme out of South San Francisco is focused on
6 fermentation. They use sugar to grow their algae which
7 is an industrial process that's contained in stainless
8 steel vats. It's really more similar to something like
9 a pharmaceutical production process than an agricultural
10 process. But I think it's indicative of a broader
11 market trend which is to try to establish this industry
12 and let it grab a foothold using higher value products
13 so that they can grow algae in high cost facilities in
14 the near term and sell it to produce things like
15 cosmetics which they've done, I think they have a deal
16 with Unilever now, and also selling feedstocks to the
17 nutritional industry.

18 Sapphire Energy out of San Diego is really
19 more focused on the long term development I think with
20 genetic modification of algae and things like that.
21 They have a demonstration facility planned.

22 And then Aurora Algae in Hayward. Again
23 focused on higher value products in the near term,
24 pharmaceuticals, supplements, things like that. They
25 have a demonstration plant here in California as well as

1 one coming online in Western Australia shortly.

2 Certainly not as highly funded is the Cal Poly
3 Research Group also with Micro Bio Engineering which is
4 a company that I'm involved in along with Dr. Lundquist
5 which has partnered with the CEC on a couple of
6 projects. A few of them were part of the PIERs program.
7 What we're focused on is algae production with treatment
8 of wastewater. So municipal wastewater and also
9 agricultural wastewater, these are things that we feel
10 are really near commercialization and some of the
11 infrastructure already exists in California, in fact, to
12 take advantage of these things. There are sites
13 throughout the state where algae is grown, tons of algae
14 a day for the treatment of wastewater and really the
15 biomass is more of a nuisance to them than it is are
16 resource. So I think that by digesting that
17 potentially within the next few years, we could really
18 turn it into a resource.

19 I just wanted to include some quick pictures
20 of our research facilities which are also CEC funded.
21 We have 935 square meter ponds that we're nearing
22 completion of. When we finish these in San Luis Obispo
23 this will be the largest demonstration plant of its kind
24 in the United States. Probably actually in the world
25 now that the earthquake in New Zealand has wiped out the

1 ponds there.

2 We also are set up to do smaller batches with
3 small ponds and settling experiments to research
4 harvesting of algae by bioflocculation, laboratory
5 facilities, chemistry on oil products and biogas and
6 then we all have a large feed mill which is industrial
7 scale and has been used for algae feed trials in the
8 past.

9 A few of the different types of studies we've
10 done. With that, I'll open it up to questions if you
11 have any. Okay.

12 COMMISSIONER BOYD: Thank you. Thanks for the
13 commercial about what the PIER program does. Trouble is
14 it's the wrong audience. In any event.

15 Just a comment on my part, not a question,
16 that I for one having studied fuels for a long, long
17 time do feel that the world faces a diesel fuel problem
18 and so this is a very interesting approach to providing
19 maybe some supplement to the huge demand there will be
20 once the world economy straightens out on diesel fuel.
21 And I think you've identified a couple of real potential
22 areas for this type of fuel and this type of approach to
23 revising it. I'm glad we're part of it together.

24 MR. HUTTON: Thank you.

25 MR. PELLENS: Good morning, Secretary Ross,

1 Vice-Chair Boyd. I'm Brian Pellens with Great Valley
2 Energy. I wanted to talk about the work that we're
3 doing under a grant from the CEC, funded under AB 118,
4 we're one of the three projects that were chosen for
5 funding under the advanced biofuels initiative. We're
6 studying the feasibility really of using fractionated
7 sweet sorghum as a purpose grown energy crop to produce
8 biofuels and other products.

9 Sweet sorghum-ethanol produced from sweet
10 sorghum would qualify as an advanced biofuel under the
11 RFS. It grows well here in the Central Valley and, more
12 precisely, in the San Joaquin Valley as Mark Jenner was
13 showing in one of his slides. It's a low water use
14 plant. We've got irrigation trials that are going on
15 right now under the joint CDFA CEC PIER study. We've
16 got irrigation rates in the upper teens and low 20s with
17 that, just per acre.

18 Importantly as the subject of what we're
19 doing, it can be fractionated up front. When I say
20 fractionated, I mean we are taking that plant stock and
21 separating it into three or four, depending on how you
22 look at it, distinct physically and chemically distinct
23 pieces that can be used to make other value added
24 products. I use some terminality when I speak, if you
25 figure me if you haven't heard of these before, but

1 they're not in common language and sometimes I forget
2 that.

3 The dermax, when I talk about the dermax
4 that's the epidermal, outer layer. It's got a waxy
5 deposit on the outside of it. I considered actually
6 bringing some here but I chose not to. I had to start
7 my day a little early today. Anyways, there's a wax on
8 the outside of it. It has a pretty rigid outside and
9 then inside is a softer, pithy material that has the
10 majority of the juice and really what we're looking at
11 for biofuels, the sugar.

12 We're working with a company called KTC Tilby
13 that's developed this process for the separation. It's
14 been implemented in Mexico on sugar cane. We're going
15 to use it for sweet sorghum.

16 They've actually turned some of the—these were
17 actually all made from sugar cane but they've turned
18 that into some products. It's kind of a visual
19 representation of how the process works. It's not
20 entirely accurate the way that it works now.
21 Essentially there's a series of wheels and blades that
22 effects the separation.

23 The other products that we've identified that
24 could be made are things like lumbar products, oriented
25 strand boards, cement board, that sort of thing.

1 There's food grade waxes, pharmaceuticals, animal feed
2 could be and of course ethanol or other biofuels that
3 would rely on a sugar platform.

4 So really what we're moving toward here is a
5 biorefinery model and so we'll be trying to maximize the
6 profitability and flexibility of the final facility once
7 it's built. This really follows the oil refinery model
8 which can produce many different kinds of products and
9 fuels.

10 Just to give an idea of where we see, on a
11 proforma basis, the difference between the input of
12 sweet sorghum and what the output value might be. We're
13 looking at the weighted value of products. This isn't
14 even a really high value cause of about \$84 a ton of
15 products coming out of the backend of the facility. We
16 think that's a multiple of what the incoming feedstock
17 would cost.

18 Sweet sorghum is an interesting feedstock.
19 It's been studied in California for decades. There's
20 been a lot of work done on it. We think that we'll be
21 able to get two crops per year in the San Joaquin
22 Valley. It's uncoupled from the commodity market. It
23 will grow on marginal soils. It will grow with
24 recycled, reclaimed water. There's actually some
25 evidence that it might be beneficial to grow it on salt

1 impacted lands, that's one of the things that we're
2 going to be looking at.

3 It's small scale, the way that we have this
4 business set up but it is scalable and we think that we
5 can produce sugar based ethanol that's comparable to
6 corn ethanol pricing. Sweet sorghum grows just about
7 everywhere that there's people. It's going to grow well
8 here because we get a lot of heat in the San Joaquin
9 Valley and so it likes the heat and it will regrow after
10 its cut initially, it's called the ratoon. The ratoon
11 crop will reuse the root structure that's already there
12 so it doesn't take nearly as long to get the second
13 cutting back out. The sugar yield is a little lower for
14 that ratoon crop.

15 As far as the low-carbon pathway, this is
16 based on CEC staff estimates that put it at about an 84
17 percent decrease below the low-carbon fuel standard
18 baseline for California gasoline for the ethanol
19 pathway.

20 We've got a good project team with Great
21 Valley Ethanol, KTC Tilby is our technology partner for
22 the separation requirement. We're working closely with
23 the CBC in UC Davis. We'll be bringing in some other
24 folks that are listed there as well that have not yet
25 been identified. We also work very closely with W.M.

1 Lyles which has a long history of biofuels development
2 here in the San Joaquin Central Valley.

3 So where we are right now is in Phase I of,
4 basically, a three phase build out. We're in the pilot
5 phase. We have a 1 ton per hour separation system which
6 should be on its system today, we expect to get it next
7 week. We've got the crops ready to be harvested and so
8 we'll be running separation trials with that equipment
9 very shortly. We'll be taking samples of that material
10 and sending it off to laboratories for analysis to
11 provide input for key characteristics for products that
12 we could make out of that. We'll also be measuring the
13 yields that we get out of that processing equipment for
14 each of the different fractions.

15 This program is funded through the CEC grant.
16 Funding goes through 2013. We hope to have
17 substantially all the information that we would need to
18 move into the Phase II demonstration schedule sometime
19 next year. In that Phase, we will build a 10 ton per
20 hour processing facility and really demonstrate the
21 whole field to--and all the logistics from growing to
22 scheduling and harvesting right through the whole or
23 processing at the facility.

24 At this point we think we may have some
25 pelletizing for biomass there. We will either have

1 sugar juice that can send to an existing ethanol
2 production facility here in California or we may ferment
3 to a beer and transport that material for distillation.

4 After that demonstration is done, our next
5 step up is a 5X expansion probably at the same site.
6 When we do that, we expect to have about 4,500 acres of
7 sweet sorghum production but if we're able to get 10
8 percent of nearby acreage to change over to sweet
9 sorghum production, trucking distance will be less than
10 10 miles, significantly less.

11 We're targeting a mid-2016 start up. At this
12 point, we think it will be a \$60 million project. It
13 should have an 8 million per year biofuel capacity.

14 Importantly, we'll also have about 1,000
15 pounds per day of biomass feedstock that we'll make into
16 other products in addition to the processing of the
17 dermax for the wax and the bioactive compounds.

18 So there are several drivers of why we think
19 this is a really good idea. One of them is the price
20 for U.S. based sweeteners as a proxy for what it may
21 cost for a producer to make biofuels from a sugar based
22 platform. Right now, we anticipate as a fully loaded
23 price, not a breakeven price, but a fully loaded profit
24 and included price of being able to get it into the
25 market at less than .20 cents a dry pound which is

1 significantly less than the U.S. markets.

2 In addition, with the low-carbon fuel standard
3 we suspect that we'll be displacing, and maybe this
4 graphic is incorrect, but we won't be displacing
5 California corn ethanol but we'll probably be displacing
6 Brazilian sugar cane ethanol but in any case with the
7 lower carbon footprint that we'll be able to provide, it
8 should take less than that ethanol to meet the low-
9 carbon fuel standards and with an 84 percent reduction
10 in carbon, this ethanol made from this sugar platform
11 would be able to help me beat the carbon decrease in
12 2020 with at a 12 percent level. So we still would need
13 to blend, even with this, above 10 percent.

14 You know we're a start up at this point and
15 everywhere we look are obstacles to getting this done.
16 There's a lot of uncertainty out in the marketplace
17 right now, a lot of financial uncertainty, as I said,
18 we're going to need to raise capital. We've got several
19 programs that have been very useful in the past and
20 there's some uncertainty whether they will be available
21 for us when we're ready. The BCAP Program, the loan
22 guarantees. Those would all be very useful for us. In
23 addition, when the blender credits expire and the
24 tariffs expire, what's going to happen to the biofuels
25 market? I think when we actually get to the point where

1 we need to raise significant cash, a lot of those
2 questions will be answered.

3 So those are some of the things that we see as
4 possibly holding us up. And I'm available for any
5 questions if you have any.

6 COMMISSIONER BOYD: Thank you.

7 MR. MILLER: Hi. This is Scott Miller from
8 the Wasted Fuels Conference which is being held--

9 MS. TATE: Sir. Sir. I'm very sorry, we have
10 one more speaker and then we're opening it up to
11 questions. My apologies.

12 MR. MILLER: Okay.

13 MR. RUBENSTEIN: It's tough being the last guy
14 in the audience here.

15 Secretary, Commissioner, Staff. Thank you
16 very much for the opportunity to address this forum
17 today. Dave Rubenstein. I'm with California Ethanol
18 Power and we're in the process of developing a sugar
19 cane and sweet sorghum facility in the Imperial Valley.

20 There's a diagram of what we believe the plant
21 is going to look like. It would be producing 66 million
22 gallons of extremely low-carbon ethanol, 49.9 megawatts
23 of renewably produced electricity, and 880 million cubic
24 feet of biomethane as well as 27,000 tons of organic
25 fertilizer.

1 We're working with Uni Systems de Brazil which
2 is an engineering firm out of Brazil and has offices in
3 Miami. They are doing the engineering for us and, proud
4 to say, we just received our copy of the Phase II
5 Engineering Report from them which is going to be
6 submitted to the Bank of Brazil to see if we can get
7 financing from the Bank of Brazil for this project.

8 I've put some slides on here showing some
9 projects that Uni Systems has built throughout the
10 Americas, Costa Rica, Venezuela, Argentina, Brazil.
11 They're building a sweet sorghum to ethanol facility in
12 Florida. So these are some of their earlier projects.

13 We've teamed up with Fagen out of Minnesota.
14 They've built 70 percent of all the corn ethanol plants
15 throughout the U.S. and very capable and a quality
16 construction group. We're pretty pleased to have both
17 of those on our team and both firms made significant
18 investments in the company.

19 Here's a biggie for us. We had an economic
20 impact analysis done at the end of last year, I wish it
21 had been done a little bit sooner for when we had
22 applied for AB 118. Pretty significant economic impact
23 for the state of California and the Imperial Valley in
24 particular. The highlights would be that during the
25 course of construction, the first couple of years of

1 operation, almost a billion dollars of gross site
2 economic output and 8,800 total jobs, that's fulltime,
3 part-time, direct and indirect jobs for each project.
4 So pretty significant impact.

5 One of the things that we like to throw out
6 there, as many of the other speakers have talked about,
7 is that California importing foreign oil. 300 million
8 barrels will probably be imported this year, at \$90
9 bucks a barrel, that's \$27 billion that we're just going
10 to be shipping out overseas. Dollars we'll never see
11 again. And if we could kind of ramp that down a bit.
12 \$74 million a day, \$3 million an hour, \$51,000 a second
13 or \$850 every second. Pretty significant.

14 Currently in California we've talked about it
15 being 10 percent blended. We think that it will
16 eventually get up to 15 percent. Everybody knows about
17 the low-carbon fuel standard, the renewable portfolio
18 standard which was just increased this past year and the
19 Air Boards cap and trade program, we believe all of
20 these will continue to drive investors to our project.

21 I did my slide here just a bit different. It
22 shows you what the carbon intensities are of the various
23 fuels. We had lifecycle associates do an estimate of
24 ours which turned out to be 15 grams per megajoule so
25 pretty excited about that.

1 Here's a blog that came out a few months ago.
2 We talk about California being able to get ethanol, low-
3 carbon ethanol from Brazil, there's a huge demand for
4 that and we've actually had folks from Toyota who have
5 come over to see if they can get some of the portion of
6 the ethanol when we start to ship that to Asia. The
7 low-carbon fuel center isn't just here in California.
8 We'll see that right now there's certain reports that
9 say by 2020, there'll be a 130 percent increase for the
10 demand out of Brazil and we could be looking at 5
11 billion gallons of deficit for low-carbon fuels.

12 This was just kind of a market price that came
13 out on August 23 to give you an example a little bit of
14 what we're looking at and what we have to present to our
15 investors. Ethanol was about \$3 a gallon in LA and the
16 advanced biofuel RINs that go with it were \$1.22. It's
17 a pretty good opportunity to get involved with the
18 project.

19 Imperial County has a terrific report that
20 comes out every year and they show what the acres are,
21 what the various crops are and what the value of those
22 crops were in the past. From 2010 you can see this is
23 how it all falls out. We would be in the field crop
24 category of 350,000 acres, producing \$360 million of
25 revenue.

1 Interestingly, in 2010 there was about—acres
2 were down by about 7,000 acres which was about 1.3
3 percent but tithe values had gone up significantly that
4 they were able to get \$145 million extra revenue or
5 about a 10 percent increase.

6 Here's the USDA greenhouse down in the
7 Imperial Valley and this is just to show you some of the
8 work that we've been doing. We brought sample tissue in
9 from other states and we grow them in the greenhouse, we
10 put them in the fields, we harvested and then we
11 replanted again. So that's what our process is now. To
12 try to grow our acres so that we'll have enough acres by
13 the time the plant comes online hopefully in about three
14 years.

15 This picture was taken a week ago last Monday.
16 We had some folks in from Syngenta and those are the
17 sugar cane fields that we're actually keeping in
18 production right now. And this is at the research
19 station, we're doing a sweet sorghum test with Monsanto
20 and this is the research station that they have.

21 This kind of goes back to the book that I
22 showed you a moment ago from Imperial Valley. And it
23 shows how—what we're thinking about doing is about
24 40,000 acres of sugar cane that would be grown in an
25 annual basis and we think that there would be an

1 opportunity to grow sweet sorghum on a seasonal basis
2 which does a couple of things. It's not necessary for
3 us to do this but we think that it's going to work out
4 to the advantage of the project. We want to take the
5 sugar cane out of the field in the summer months when
6 it's a prime growing time, when it's so hot and the
7 sugars are screaming. So we would fall into this
8 category and if you see where alfalfa is 136,000 acres,
9 producing about \$130 million of revenue. If you took
10 the combination of our sugar cane and sorghum, we would
11 have about 74,000 acres but you could do other crop son
12 the sweet sorghum acres so you're not taking that all
13 out. It would come out at being one of the best revenue
14 generators for the local growers.

15 The one thing that we do have in our figure
16 that they don't have in this book is the profit per
17 acre. We have a guaranteed profit for our growers. If
18 they grow the cane to our specifications and work with
19 us and do the things we ask them to do, we pay them back
20 all their costs, we give them a guaranteed rent for
21 their land and then we'll give them a guaranteed profit
22 per acre. Pretty much knocking the risk out of the
23 farmer and trying to figure out what crops that they
24 need to grow with.

25 Just a couple of quick things. In our

1 enterprise zone, we're optimistic that some of those
2 will stay in place and kind of help get the financing
3 down. Imperial County has some programs. Federal
4 government, we're not really relying on any money from
5 the USDA at this point. We applied for BCAP and missed
6 that one. We were in the Department of Energy loan
7 guarantee program and we fell out of that. Not really
8 sure if we could really count on the federal government
9 to help us at this point. We surely would hope so
10 though.

11 We're doing a project finance type project
12 strategy on this. Non-recourse financing. We're
13 working with a major energy company that is willing to
14 give us a floor price for our ethanol which will
15 guarantee the lenders and the equity that we could cover
16 principal interest and expenses of the facility. It's a
17 huge project. It's \$465 million. As mentioned before,
18 our engineering firm Uni Systems has access to the Bank
19 of Brazil, being a small to medium size manufacturing
20 company but they would finance a substantial portion of
21 the project.

22 As mentioned, this nice report that they just
23 finalized for us is the foundation for the application
24 that should be filed, hopefully, by the end of next
25 week. We've had numerous talks with a lot of

1 international banks that are interested in possibly the
2 subordinated debt on the project. We're also looking
3 for project finance equity and it's kind of a strange
4 but we're finding a lot of people that are very
5 interested in all parts of these and we don't think that
6 it's going to be too tough to get it financed. Our
7 biggest problem is going to be where we're at now.

8 We figure that it's \$16 million to get us from
9 day one, which was back in 2007, to financial close
10 which we hope will be in a year. We've raised \$6.5
11 million from friends and family as well as Fagen and Uni
12 Systems. We've incurred \$4 million worth of debt to
13 this point. Mostly salaries of the team and some
14 agricultural costs. Most of that everybody is willing
15 to take a severe slashing of that to take one for the
16 team and convert the remaining debt to equity. There's
17 still available to get about \$500,000 that we think
18 could get us from today to probably the end of the year
19 which will help the team get the Bank of Brazil
20 financing underway. Get some more engineering, get some
21 more permitting done and then we'll need about \$5
22 million to get us to financial close. The majority of
23 the money is being used for engineering, growing the
24 sugar cane and the permitting. Those are the main
25 issues. We're hopeful that AB 118 could help us with

1 some of that \$5 million and then if we get far enough
2 along some of the guys here on the equity and even the
3 subordinated debt have shown interest in maybe coming up
4 with a portion of that \$5 million that we need to get to
5 close.

6 And that's the project.

7 COMMISSIONER BOYD: Thank you. Interesting.
8 Panel is done so now questions from the folks here and
9 on the phone.

10 MS. TATE: Mr. Miller, if you're available you
11 can ask your question now.

12 MR. MILLER: This is Scott Miller from the
13 Wasted Fuels Conference which is being held Sunday,
14 Monday and Tuesday in San Diego. It's an annual event
15 and some people from the Bioenergy Producers Association
16 and various interested parties will be there.

17 I want to thank the Commissioner on his
18 wonderful work on behalf of Wasted Fuels in California.
19 I have one caveat however, there was a speaker that was
20 to come Rheta de Mesa to speak in our plenary session
21 and budget cuts precluded her from coming. I would
22 wish that in the future that California would not cut
23 the budget in your critical work on behalf of Wasted
24 Fuels.

25 COMMISSIONER BOYD: I appreciate that.

1 MR. MILLER: My second point is that there
2 seems to be a serious disconnect between the parties in
3 favor of AB 32, the low-carbon fuel standard and CARB
4 regarding supporting gasification as a conversion
5 technology relevant to production of fuels in California
6 from waste streams. I would ask that there would be
7 more continuity. There was great support on behalf of
8 AB 222 during the last session that received support
9 from the CEC, CARB and Cal Recycle. Yet, it was voted
10 down by a Committee in the senate after it passed
11 overwhelmingly in the Assembly. We can't have these
12 types of disconnects, particularly since one of the
13 people voting against the measure was the author of AB
14 32. Any comments?

15 COMMISSIONER BOYD: It's too close. The
16 capital is right across the street.

17 [LAUGHTER]

18 MR. MILLER: You're on your way out, so.

19 [LAUGHTER]

20 You're expendable.

21 COMMISSIONER BOYD: Yeah, I'm expendable.
22 Well, what can I say. Chaos in Sacramento exists and
23 it's just tough to get everybody on the same page and
24 working together. What more can I say? You ever see
25 the Governor, you can ask him about his budget. The key

1 thing is to get the California economy on its feet,
2 everybody is really grouchy, nasty, what have you right
3 now and it is admittedly tough to do that when programs
4 like we're talking about here today and things we're
5 talking about today would help do that and they too are
6 impacted but let's just say we're trying. I guess we'll
7 just keep trying.

8 MR. MILLER: No one is trying harder than you
9 and I thank you for that.

10 COMMISSIONER BOYD: Thank you.

11 MS. TATE: Are there any other questions.
12 Dwight, your line is open.

13 MR. STEVENSON: Thank you. This is Dwight
14 Stevenson with Tesoro. I apologize for the echo, I
15 don't know if that's hitting you guys or not but I'm
16 getting it.

17 The folks who are talking about the cane
18 ethanol and the sorghum ethanol grown in California
19 certainly makes a lot more sense than the expected
20 shuffling of ethanol between brazil and the U.S. that we
21 think would occur under the low-carbon fuel standard.
22 So that's certainly a good direction.

23 I've got a question about the water
24 requirements for these crops. And I'm sure that
25 everybody's aware of the California water shortage and

1 does the—do these crops use more water and effectively—
2 and what effect would they have on the growth of other
3 crops and the carbon sequestration of those other crops.
4 I'm thinking does that need to be taken into account.
5 Do you folks have any comment on that?

6 MR. RUBENSTEIN: Hi. Dave Rubenstein again,
7 California Ethanol Power. Yes. Water comes up every
8 day and actually 12:40, that's the first time today so
9 it's a late start. Thank you. We've done extensive
10 studies and the amount of water used to grow the sugar
11 cane is about the same amount of water that's currently
12 being used to grow the alfalfa, Sudan grass in the
13 Valley. The benefit is that there's a lot of water
14 that's retained in the cane during the processing and
15 we're working with numerous water companies about
16 getting that water out, cleaning it and using the water
17 to run the facility. Our current engineering estimate
18 show that we'll actually be water positive for the
19 facility and we're having some struggles because the
20 IED, they're not used to purchasing water and we're
21 actually trying to give them back some clean water and
22 we're not sure if they'll be able to take it. There's
23 opportunities there for either using it with some other
24 industries around the area because we're going to be in
25 an industrial part, it could go into the retention

1 ponds, things like that. It's a good story to tell.

2 MR. STEVENSON: Okay. So the plan itself is
3 balanced, it sounds like, that's pretty phenomenal. But
4 the water use for the cane is about the same as for the
5 alfalfa that's currently going on?

6 MR. RUBENSTEIN: Yes.

7 MR. STEVENSON: The point I'll make here is
8 that I think that that net reduction in alfalfa growth
9 needs to be considered in the carbon sequestration
10 credit that's accrued to the sugar. That's all.

11 MR. RUBENSTEIN: The cane has tremendous
12 sequestration because you put the cane in the ground and
13 you're going to get five cuttings off of that over a
14 five year period so the amount of sequestration from the
15 cane is going to be astronomical. I'm not an engineer
16 but I would think it's going to be significantly higher
17 than what the current alfalfa is doing at this point. I
18 think as far as that goes, we are hopefully, with cap
19 and trade, we might be able to see more benefit for this
20 project because of that then we're evening accounting
21 for tat this point.

22 MR. STEVENSON: That certainly should be
23 considered in the balances for the mess we call the low-
24 carbon fuel standard, the whole fuel cycle analysis.
25 Thank you.

1 COMMISSIONER BOYD: Gentleman—

2 MR. RAINEY: There's a lot of good ideas here
3 today but it seems like bottom line fermentation has
4 been around as long as agriculture And agriculture
5 burning wood has been around even longer and we're not
6 taking advantage of truly new technology and extraction
7 of oil is certainly an advancing field. It seems like
8 taking advantage of thermal chemical conversion,,
9 gasification technologies is a lot more current and
10 we've got commercially feasible capabilities available
11 to us now and that should be where most of the policy
12 should be focused. We're got, a little bit ago, a guy
13 commenting on waste to energy and it seems like the
14 thermal conversion technologies that are available today
15 can take advantage of waste streams, can take advantage
16 of purpose grown crops. There's a number of different
17 ways that technology can be applied and that out to be
18 the focus of this particular effort. Any comment on
19 that?

20 MR. RUBENSTEIN: We've looked at gasification
21 technologies on our project and we haven't really found
22 anything that is commercially viable, reliable or
23 financeable at this point. As Neil and I were talking
24 today, when the Wright Planes started flying they didn't
25 jump into a 747. We got to kind of inch our way up. I

1 think the technology that they're doing in their plants
2 is incredible. As we get ours underway we think that
3 there's a chance to even advance. We think that if
4 cellulosic becomes available, there's a chance to take
5 the excess biomass and convert that into an
6 infrastructure that's already built. You keep going
7 that route. But trying to find the holy grail or silver
8 bullet, I don't think we're going to find that and I
9 think we're got to keep the process going forward and I
10 think we'll eventually get there.

11 MR. MCKINNEY: Jim McKinney, Energy
12 Commission. Dave, I have a question for you and I want
13 to acknowledge too that you guys just missed the mark on
14 getting funding under the first round under AB 118. So
15 I'm really glad you're still out there raising financing
16 and working on your project.

17 The figure you threw out, the \$325 million
18 dollar, say expression of interest, from the Bank of
19 Brazil. Could you talk a little bit about how they view
20 advanced energy projects like yours, vis-à-vis U.S.
21 banks. It's pretty striking to me that a Brazilian bank
22 would be so interested when it's so hard to raise
23 domestic capital right now.

24 MR. RUBENSTEIN: Yeah. So it's part of their
25 Export Finance Group. What they're trying to do is

1 promote small and medium sized manufacturers to export
2 their products out of the country and get them into,
3 it's not just the United States, it's any country. Our
4 engineering group has worked with them in the past.
5 They've done a number of projects with them. I think
6 they're doing financing in Costa Rica, Venezuela and
7 maybe even Argentina right now. They're also doing a
8 sweet sorghum to ethanol facility right now in Florida.
9 The Bank of Brazil is fully behind that. I think it's a
10 \$100 million project. I think they're going to finance
11 \$90 million of it, extremely low interest rate. I think
12 it's like 1.5 percent interest rate. It's incredible.

13 The program with the bank from what we
14 understand, last year they had \$30 billion or \$35
15 billion in this fund to go out and they only put \$5
16 billion on the streets. They're looking for folks to
17 come in there.

18 I believe this year was increased to \$45
19 billion and the engineering has had preliminary
20 discussions with them and they're excited about our
21 project. A couple of things. One, they know sugar
22 cane. They know the engineering firm and the equipment
23 that they're going to be loaning against. They're also
24 excited about going to the United States because of the
25 continuing relationship they're trying to have with the

1 United State and, more importantly, they were even more
2 excited from what we've been told about the California
3 connection and the former Governor extending friendship
4 and things like that. We're getting positive feedback.

5 It's a huge amount of money. There's a lot of
6 work to be done. You see the size of these documents,
7 they're about an inch thick and I'm sure there's going
8 to be quite a bit more. Overall impression is quite
9 good and after spending the last three years in D.C.
10 talking to guys at the Department of Energy, it's kind
11 of a welcoming relief to talk to people that know that
12 they want to get a project done rather than try to find
13 walls you can get around.

14 MR. DOUGLAS: My name is Tim Douglas and I'm a
15 local Delta farmer. I have a little bit of interest in
16 an idea and it came across to me last year and I've
17 given it a lot of thought. Thank you so much for the
18 time, for the public comments, I just wanted to propose
19 is it possible to see the California Conservation Corps
20 Youth as a solution to a couple of the problems
21 mentioned as transfer of the woody materials, vineyards
22 cuttings and all the other waste stream labor needed.
23 The farm place could provide jobs to the youth and young
24 adults also contributing to the problem of youth
25 unemployment. There's always a 2-4 month wait to join

1 the CCC. Instead, they're already hard at work in very
2 bad conditions and very cheap pay and these individuals
3 are going out of their way to try to find a job that
4 they enjoy most, especially in California and how big of
5 an agriculture base we are. My generation has
6 absolutely, I think, no knowledge of farming and I think
7 that, for me, it's very disappointing. I love what I do
8 and I think people my age are really, really gung-ho
9 about farming. It's to them a mysterious concept. I
10 think that a solution could involve pushing and teaching
11 the new generation of youth into the knowledge of hands-
12 on experience of the farming industry. That's the only
13 thing I really wanted to say.

14 SECRETARY ROSS: Thanks for your comments.
15 It's Tim, right? Interestingly enough, the State Board
16 of Food and Agriculture has a meeting next Wednesday.
17 It's being hosted at the State Board Chair's Center for
18 Land Based Learning in Winters. The topic of that
19 session is the Next Generation of Farmers and Ranchers.
20 I would definitely encourage you to be there and bring
21 others with you because we want to be as creative as
22 possible to keep this excitement going. I've been
23 around the state and I know that it's real and I know
24 it's a wonderful opportunity for all of us. Thank you.

25 COMMISSIONER BOYD: I'm very intrigued by your

1 suggestion of using CCC, California Conservation Corps
2 folks, and I've made a note of it. I've never heard
3 that reference before. It may well have been thought of
4 before. Before being Energy Commissioner, I served a
5 tour of duty as the Deputy Secretary of the Resources
6 Agency and got involved with the Conservation Corps. I
7 am incredibly impressed with what they do and how they
8 do it. I think it's an excellent idea. I hope some of
9 us can inject it into dialogue at least on some of the
10 pilot programs but also involving the forest materials,
11 in particular, we're aware there's—seems to be a lot of
12 concerns there about the labor costs associated with
13 getting materials. So, good idea. We'll pursue it.

14 DR. HUMISTON: Just a quick comment. Several
15 of the last speakers have expressed concern about the
16 possibility of not having access to USDA loan guarantees
17 in the future. I'm pleased to report that is the one
18 area of our budget that not only is not looking at any
19 cuts, quite the contrary. Year before last we converted
20 our single family home loan guarantee program to be
21 budget neutral with zero subsidy so it doesn't require
22 appropriations from Congress. That program, almost
23 overnight, went from \$3 billion a year to \$24 billion a
24 year. I literally have no end in funding available for
25 loan guarantees for single family home loans. We're in

1 the final stages of doing exactly the same thing to our
2 Business and Industry Loan Guarantee program right now.
3 Hopefully we're have that completed. It's with the
4 Office of Management and Budget. We hope to have that
5 completed very soon. And that literally means that
6 there will not be a limit on availability of Business
7 and Industry Loan Guarantees once that's completed. We
8 could easily go up to \$24 billion a year for that.

9 MR. MAYUGA: I want to elaborate more on what
10 I talked about earlier about the Siemens project here in
11 California. Gasification, as this young gentleman
12 indicated—one of the benefits of gasification, at least
13 with our process, is that it is a closed loop system.
14 The only emission is steam, roughly about 225 pounds,
15 160 million tons of steam annually. We also will be
16 producing potash, nitrogen, and sulfur. But more
17 importantly, this is what got a lot of the guys down at
18 Cal Poly Pomona, was liquid CO2 for growing in hot
19 houses. Our plan is to bring approximately 500 acres of
20 hot houses to the County of Colusa and the City of
21 Colusa, utilizing some of that liquid CO2 as a growing
22 amendment.

23 The potash that we'll be producing will be for
24 sale or it could even be a trade out for the feedstock
25 growers. There's a lot to be said for gasification. We

1 are self contained. We have our own wastewater
2 treatment plant. We even produce our own electricity
3 from the syngas, methane syngas. We'll be producing
4 about one megawatt at our plant to run our four units.

5 So gasification has a lot of positive things
6 attributed to it. We're looking at four specific
7 regions, (inaudible) area, the Colusa/Sacramento Valley
8 area, the Imperial Valley and possibly the area around
9 Monterey and Salinas as possible feedstocks to begin
10 with, areas.

11 But gasification and Siemens has looked at and
12 I've been to Germany and looked at a lot of the
13 processing that they're doing there. A lot of the
14 little towns in France and Germany, parts of
15 Switzerland, have their own little digesters producing
16 their own electricity. Switzerland is 100 percent
17 recyclable. You won't find a landfill in Switzerland.
18 They figured out a way to take all their waste and
19 utilize which is pretty amazing.

20 So the gentleman from Harris Ranch, I have to
21 get with you. I need your poo.

22 [LAUGHTER]

23 What I really want is the bark beetle trees.
24 Anybody have bark beetle trees? That's really great
25 feedstock for us. You don't know about bark beetles?

1 Well, all the pine trees that have been rendered useless
2 by bark beetles.

3 SECRETARY ROSS: Is that it? Any other
4 comments or questions?

5 MR. JENNER: Sorry, I just had to pipe in.
6 Mark Jenner from the California Biomass Collaborative.
7 I think that—I would just encourage everyone to be
8 careful about business plans that involve zero cost
9 feedstocks. I think we're in a time when we can't grow
10 enough plant material. We are continuing to find new
11 ways to use the plant material that has already been
12 created so industries that have been dependent on very
13 low cost residuals, residues, are now squirming because
14 those prices are going up. That's the trend. You may
15 find a feedstock that has little value today but in five
16 years it may have significant value. I've seen a lot of
17 projects, even with manure, that farmers are paying to
18 get rid of their manure but if there's a fear that
19 someone is going to make money on it, they won't enter
20 into a contract of any kind. That's the reality. If
21 we're going to get to somewhere, we're having a
22 bioeconomy—it's that everybody is going to get paid.

23 SECRETARY ROSS: I'm sure the farmers applaud
24 that. Thank you all very much. Commissioner Boyd,
25 please give us your final words of wisdom.

1 COMMISSIONER BOYD: I just want to join you in
2 thank everybody and I think you and I and our staffs
3 need to talk about what we're going to do next with what
4 we've heard today and how to apply it to what we're
5 doing and how to revise maybe some of the approaches
6 we're taking in existing programs or how to provide more
7 openings for more folks. Or just how to encourage more
8 people to get involved. We are still blessed with the
9 AB 118 program and most of its revenue. The revenue
10 falls off with the economy but they haven't swept the
11 money from us. We're still in a position to try to help
12 folks. As you and I talked earlier this week. It seems
13 to us who are unfortunately so office-bound, duty-bound
14 mainly because they won't let us travel anywhere, we do
15 need to reach out more and we need more reach out, more
16 education, more getting everybody to work together on
17 this. I hope in the not so distant future we can push
18 more of that and do more of that.

19 I think we've got more people talking together
20 and I think we just need to do more of that. For
21 several years, I chaired the bioenergy, interagency
22 working group in the state that's done some of the
23 plans. But we've been talking about the need to modify
24 that group to start opening it up to a larger
25 stakeholder group of outside folks. You can do plans

1 and provide a lot of rhetoric and try to give people
2 some political goals to talk about. We've done about
3 all of that we can. The good news is, as you and I
4 know, this Governor has embraced the concept of the plan
5 and his office has given us charges to update the plan
6 and have it reflect the policies of the current
7 administration and go out there and do more. I think
8 it's time to get more stakeholders involved in that. We
9 can talk about how to do that.

10 The AB 118 program has an Advisory Committee
11 like all Advisory Committees started out kind of rough
12 but after a couple of years, there's a great deal of
13 knowledge and trust that exists between all the players.
14 And we probably need to do more things like that to push
15 these ideas and to push this more into developing this
16 economy in California, doing more for Californians and
17 providing additional business opportunities for many and
18 perhaps revenue streams for California agriculture which
19 is a backbone industry of this state.

20 It's been fun. So thank you.

21 SECRETARY ROSS: Thank you.

22 [Meeting is adjourned at 1:01 p.m.]

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REPORTER' S CERTIFICATE

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

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

IN WITNESS WHEREOF,

I have hereunto set my hand this 21st day of October, 2011.

Kent Odell

Kent Odell
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