Agenda Item A

February 24th Draft Meeting Notes

Oregon Low Carbon Fuel Advisory Committee

State of Oregon Department of Environmental Quality

Advisory Committee 4th Meeting

February 24, 2010

Attendance

Advisory committee members and alternates

Mark Reeve, Chair - Reeve Kearns, PC
Emily Ackland - Association of Oregon Counties
Carrie Atiyeh - ZeaChem (alternate)
Kyle L. Davis – PacifiCorp
Marie Dodds – AAA Oregon/Idaho
Robert Grott - Northwest Environmental Business Council
Sam Hartsfield - Port of Portland
Ian Hill - SeQuential Biofuels
Frank Holmes - Western States Petroleum Association
Brock Howell - Environment Oregon
Randy James - Portland and Western Railroad
Michael Johns - Lane County Department of Public Works
Christine Kelly - Oregon State University
Mark Kendall – Oregon Environmental Council
Dan Kirschner – Northwest Gas Association (p.m.)
Tom Koehler – Pacific Ethanol
Geoff McPherson – Citizen
Matt Michel - Canby Utility
Harrison Pettit – ZeaChem
Andrew Plambeck – Ecumenical Ministries of Oregon
Joshua Proudfoot - Good Company
John Rakowitz – Association of General Contractors
Paul Romain – Oregon Petroleum Association/OPUDA
Jennifer Shmikler - Farm Bureau

Others in attendance

Michael Abendhoff – BP
Maureen Bock – Oregon Department of Transportation
Alan Branscomb – CES
David Collier – ODEQ
Clark Cooney – Oregon Department of Agriculture
Calli Daly – Koch Industries
Nick Economides – Chevron
Jana Gastellum – Oregon Environmental Council
Andy Ginsburg – ODEQ
Gina Grey – WSPA
Arch Hudelson – NW Propane Gas Association
Dean Kampfer – Waste Management
Margi Lifsey – ODOT
Sue Langston – ODEQ
Jim Lyons – Sierra Research
Fawn McNeely – Legislative Advocates
Ralph Moran – BP
Dave Nordberg – ODEQ
John Reese – Shell
Vijay Satyal – Oregon Department of Energy
Wendy Simons – ODEQ
Jeffrey Stocum – ODEQ

Rick Wallace – Oregon Department of Energy

Attending from California Air Resources Board- John Courtis

Note: Where responses to questions or comments came from persons other than DEQ staff, the source is noted in parentheses, for example, ***Response*** *(CARB).*

Chair Mark Reeve welcomed attendees and called the fourth meeting of the Low Carbon Fuel Standard advisory committee to order at approximately 9:08 am.

"Welcome everyone to our regularly scheduled meeting of the Low Carbon Fuel Standards Advisory Committee. We have a full substantive agenda today. I hope we can move through it promptly. The general outline, I would like to mention, allows for any folks that would like to address the committee. As we do with every meeting, there will be an opportunity for public comment and today we have it a little earlier than we normally do. We will have it after our mid morning break at 10:45. So if there are folks in the audience who would like to address the committee please feel free to do so. There is a signup sheet on the table. Just say who you are and we will be glad to take your comments or questions at about 10:45.

There have been some request for information items and we will take those up this morning. The updates will be on the lawsuit regarding California LCFS standards and there will also be an update on Federal renewable fuel standards. Obviously, both items will have an impact on Oregon and what Oregon does. There of general interest and we should update those. Then we will move into talking about compliance scenarios, which were in our last meeting. We will have presentations from others and then from those folks involved in the California standards and also from the State of Washington. We will then get into the substantive items. We have a very full agenda and we will move through it quickly. We welcome a lively discussion. Let's start with first agenda item on meeting notes."

Agenda Item A - Review of January 27th Draft Meeting Notes

Chair Reeve asked if attendees had any corrections to the January 27th Draft Meeting Notes.

"About the logistics, we obviously would like to keep as detailed a notes as possible for these meetings. On the other hand, it would take an extraordinary amount of staff time capturing every single detail. So, we will really try to capture the essentials of the conversation, the key questions, and the commitments. We will try to keep it at that level of detail and get the notes out fairly quickly. If you see anything missing let us know. We don't want to miss anything, but we need to be somewhat efficient. If anyone has positive experiences with a transcription service, it might be helpful. Tell me or Sue off line. That's something we might think about too. Thanks."

No changes or corrections were suggested.

Agenda Item B – Updates on California Lawsuits, Federal RFS2 Final Rules

Dave Nordberg of DEQ gave a brief presentation outlining the bases of two lawsuits recently filed in federal court against the California Air Resources Board for its Low Carbon Fuel Standard regulations. The first lawsuit, brought by the Renewable Fuel Association and Growth Energy, allege that California's program causes undue obstacles to the Federal Renewable Fuel Standard program, therefore violating the supremacy clause of the Constitution.

The second lawsuit, brought by the National Petroleum Refiners Association and the American Truckers Association, allege that California's program interferes with interstate commerce, while providing little net benefit and promoting fuel shuffling between jurisdictions.

"This is a brief overview of the two lawsuits that have been filed challenging the California low carbon fuel standards. The first one was filed by the Renewable Fuel Association and Growth Energy Company representing The Ethanol Industry. Essentially, their argument is that the California Low Carbon Fuel Standard creates undue obstacles to the implementation of the Federal Renewable Fuel Standard, which is created under the Energy Independence and Security Act of 2007. That act or the rules coming out under that act requires 36 billion gallons of ethanol to be used in the nation's fuel by the year 2022. The issue is specifically over a part of the regulations that are called the indirect land use changes. If corn is diverted from the food market into fuel, then the demand for the supply is reduced and the demand is met by taking other land into production that was not into production for food elsewhere. And in the consequence for

bringing that additional land into agriculture uses, there is an increase release of carbon intensity. That increment of carbon intensity is added under California regulations and it is that part that Ethanol industry indicates creates an imbalance situation for especially Midwestern corn. So since the suit was filed, the Federal Renewable Fuel standard has come out and it has, at least for Midwestern corn, a very similar value assigned to it for the effects of indirect land use exchange. So we are not really clear just how that might affect the viability of the suit.

The second suit was brought by the National Petroleum and Refiners Association and the American Truckers Association, and that was brought under the Interstate Commerce Clause of the Constitution. Essentially it says that the Low Carbon Fuel standard creates an undue burden on interstate commerce and that it is an inefficient way to address green house gases. That California's regulations in net will do very little to reduce green house gases and there is actually a possibility of increasing green house gases by encouraging fuel switching. In other words high carbon intensity fuels will be diverted other markets and transported farther. And potentially they claim it will actually increase the amount of the carbon intensity as the result of that original transport.

There is a third lawsuit filed brought under California Statue. The claim was brought that CARB did not actually follow their procedures and requirements of that act appropriately. Given that is a state law and it does to apply to us, so we don't need to go into that. That is a very quick overview. Our understanding is that California has not yet responded to those claims, so we haven't heard the other side."

Discussion ensued as follows:

Q: *Are those in Federal court or State Court?* **A:** *Federal Court.*

Q: *Where is the third one?* **A:** *I believe the third one is in the state court.*

Q: *Who was party to the plaintiffs in the second suit?* **A:** *It was the National Petroleum Refiners Association and the American Truckers Association.*

"I believe I failed to mention that the one in the first case, the one brought by the Renewable Fuel Association, was actually brought under the Supremacy Clause of the Constitution, indicating that California's regulations interfered with Federal regulations in the same area."

Q: "*I would like to make a comment that, at least experience from other suits is that sometimes these things drag on for years and years, and then sometimes they move very quickly if the parties are forced to. It doesn't sound like there has been a response yet, so it doesn't appear to be fast tracked. If it took the normal course, it could take quite some time before some real resolution of either of those cases. Is that your general sense or understanding?"* **A:** " *I don't have a good feel for that. I think John might be able to be better able to indicate the anticipated pace." (*John did not wish to speculate about this.)

Frank: "*I brought this up at the last meeting because of the concerns that this could be drawn out and it brings up a lot of key issues. Suits have been taking a long time to make their way through the court in the past. These are very, very expensive type of suits. There is probably going to be a lot of work and a lot of time devoted to it. I appreciate Dave looking into it. We need to keep track of it because clearly it can impact what this committee is attempting to do and could influence the direction the State would want to go on this."*

Harrison: *"My question is whether John has any sense if the pending lawsuits would affect the implementation schedule.*"

John: "*The implementation continues as planned and there is no delay in the implementation schedule. So we are going to wait for the process and try to ratify the implementation issues. We will be working together on these issues and will be proceeding with the implementation."*

Q: *There has been and injunction filed?, and will there be an injunction filled? Do we know?* **A:** *I don't believe so. I haven't heard.*

Q: *Did the plaintiff's file for an injunction to stay the implementation or move or not? (* It was agreed that nobody knows.)

Q: *Is the Oregon Attorney General thinking of participating as a friend or a party supportive of the plaintiff?* **A:** *"I have not heard or asked".*

(It was agreed that no decisions have been made about that, but it was under discussion. They thanked Dave and asked for continued further updates.)

Wendy Simons of DEQ gave a brief presentation outlining the highlights of the final rules for the Federal RFS2 (Renewable Fuel Standard) program recently adopted by the Environmental Protection Agency. The RFS2 includes greenhouse gas reduction thresholds for the first time, setting up four nested categories of fuels with specific volume goals for each category. EPA made substantial revisions to its analysis of indirect land use change between the draft and final rules, resulting in reductions to the ILUC numbers assigned to corn ethanol, soy biodiesel and Brazilian sugarcane ethanol.

"I'm going to talk briefly about the final rules that are going to come out of final RFS2. I'm going to concentrate on the parts that I think are most relevant to us. The Federal RSF2 final rule was just released about two weeks ago in February of this year and it implements the requirements of the Federal Energy Independence and Security Act of 2007. As you probably already know, there was already a Federal Renewable Fuel Standard in existence already, however the EISA of 2007 made several changes that expanded the Federal RFS (notes usually referred to as RFS2), so that is some jargon to remember. Some of the key provisions of the final rules are: First of all, it sets green house gas reduction thresholds for specific categories of renewable fuels. It sets green house gas standards for the first time. There were no green house reduction standards or emission standards in the first incarnation of the Federal RFS. I have these categories nested to indicate that these are the nested categories within themselves. There is a figure for true renewable fuel. To qualify as a renewable fuel under the Federal RFS2, the fuel must have 20% lower carbon intensity than 2005 baseline gasoline or diesel fuel that it is being compared to. Within that there is a smaller subset of the fuel that will be determined as advanced bio fuels, which must achieve a 50% reduction as compared to gasoline or diesel. Within the advanced bio fuel categories, there are two smaller subcategories, bio mass based diesel and cellulosic fuels. In just a minute, I will show you a chart that gives you some ideas of the volumes for each of these subcategories. A couple of key things that happened in Federal RFS 2: First, it set volume requirements for each category. Secondly, EPA has incorporated some new information and some of the public comments from its first draft rules into the final rules concerning its life cycle analysis and particular it's indirect land use change modeling. Some of the things that were updated in the final rule were their assumptions about crop yields, about co-products, and about the pasture acreage in other countries. They also did some detailed modeling of how land use change will change in Brazil, which is a very large component. So as a result of that, when some of the indirect land use numbers changed for different fuels or crops, the fuels that fit into these different categories also changed around a little bit. In the previous draft rules, I don't believe any corn ethanol would have qualified as renewable fuel. However, corn ethanol from a new facility… by natural gas, if it is a very efficient new facility will meet the 20% below gasoline according to EPA's new analysis. Biodiesel would also meet the 20% below standard. Ethanol from sugar cane actually falls into the advanced bio- fuel category and achieves over 50% reduction in green house gas reductions in the EPA's new analysis. Biodiesel from soy and from renewable diesel from waste oils or greases will comply with this bio-mass based diesel with a 50% reduction. So it made some pretty significant changes. The indirect land use numbers and analysis for soy went down pretty substantially. Just to let you know that we have a more detailed analysis done comparing these final EPA numbers and the California modeling. At a future meeting we will get at this to make sure you have a basic of understanding and the different ways of understanding this and we will get a report that will dig into this a little bit more. Moving to the next slide, here are the numbers: Briefly the things I would like to point out here…." (Her presentation was interrupted with questions from the floor)

Q: *"Give me your explanation of the difference in the new updated RFS2. Is it reasonable or sustainable that we have such different values in carbon intensity for the same fuel in the state program and in the federal program. There are such huge differences in sugar cane ethanol and some corn ethanol and some of the biodiesel. Can there be such huge differences?"*

A: *"I think it will depend on the analysis of the life cycle impact. I think we will be looking more in depth than what the federal standard analysis shows was as well as what California did. Analysis is still happening and I can't say what the results will be right now."*

Rick Wallace, Oregon Department Of Energy: *"If you look at their analysis, they came close to California's in the indirect part. They came at 30.3 and California came at 30 for corn ethanol, which I think was kind of odd. I think we are four to five years to the point where we are going to have real numbers on indirect. They do really well for direct. They are using the same models and getting to the same numbers. They are not that far off. It is the indirect numbers that are the real problems right now."*

Q: "*I was mainly referring to the total carbon intensity. We may be several years off but I guess the question still stands. Is it justifiable and what are the unintended consequences potentially having the huge differences with the treatment of fuel."*

Rick Wallace: "*Maybe you should do indirect on petroleum as well, if you want to be fair about it."*

Facilitator: "*Mostly this is just an update on the Federal rule. Try to keep your conversation on this update and the Federal Rule."*

Q: "*This is about the Federal Rule. I want to just identify the indirect variances. The indirect numbers in the federal rule for sugar cane, for instance, went from a large number down to four. The same day that came out, a study from the National Academy of Sciences was published and stated that sugar cane Ethanol is going to have massive impacts on destroying the Amazon rainforest and then California has 47. So the indirect really kind of reinforces how inconsistent the whole process is. The Science, that is."*

John: *"May I give a quick overview, because we are still looking at the Federal analysis. There are fundamental differences between the two. Keep in mind, California's analysis is not based on 2022, it is based upon what is happening today. That is the difference. In the year 2022, they project different technology. That is one fundamental difference.*

Andy: "*Directly in response to the question, one of the things we are going to be doing is our contractor will be showing how compliance could occur in five difference compliance scenarios with our proposed program and that will include taking into account the Federal Program. You have to keep in mind these are two different programs with two different objectives. It is possible to comply with both. The fact that a certain fuel gets a certain amount of credit in one program and a different amount of credit in another program is not a fundamental flaw and can be reconciled, basically by looking at the fuel produced under by the federal program accounting for how much credit they would get under Low Carbon Fuel Standard and factoring that into a compliance scenario. Our consultant is going to attempt to do that. When we have the compliance scenarios laid out, we will have better information about how well that works. We are going on the assumption that it is going to be possible to reconcile the two programs. They have different objectives and different statutory bases, but they will still be able to be complied with."*

"That is an important point. The last couple of points I wanted to make. We have on the table the required volumes for each fuel. These are the volumes that were in the 2007 Federal Statute and EPA made a couple of adjustments to those for its 2010 numbers. Essentially what will happen is that every year EPA will come out with a rule saying what the required volumes are for that year. They intend to do it around November the year before it will be announced for requirement. However, they did not do it until February of this year for 2010. The things that are different are: You will notice that for cellulosic bio fuels, the 2007 statute required 100 million gallons. I think the EPA has decided that that target can't be met and they set a standard for this year of 6.5 million, which is quite a bit lower. However, they said in their rule that they see that several companies appear to be poised to expand their production over the next several years. So they are hoping in the next few years that we will get up to these targets. You can see that by 2022, they have a fairly large target for cellulosic bio-fuels."

Q: *Could you clarify the difference between the definition of cellulosic bio fuel, bio-mass based diesel and bio fuel?* ***A:*** *The differences are related to the following: There are some definitions based on the content fuel, of course with diesel versus gasoline and what cellulosic is made out of, but the categories are also defined by the green house gas reductions.. So in order to qualify for the cellulosic category you have to achieve 60% reduction compared to conventional gasoline or diesel.*

Q: *So it is more about performance than type, right?* ***A:*** *Yes.*

"One other thing to mention is that because EPA did not come out with the rule in time to set a 2009 standard they combined 2009 and 2010 together for 2010. Otherwise, this is the total bio fuel number for 2010 and we will see 12.95 for this year and it is anticipated to almost triple by 2022.

Q: "*I'm still struggling with this fuel thing. Advanced bio fuel in the upper level If Cellulosic and bio mass diesel requirements are a lower heading then how come cellulosic and bio mass don't add up to the requirements."*

A: *There could be other kinds, for instance sugar cane ethanol will meet the advance bio fuel requirements because under the EPA's analysis it achieves 50% reduction, however, sugar cane ethanol is not cellulosic bio fuel and it is not bio mass*

based diesel. So it can be other kinds of starch base or ethanol in that they achieve a 50% reduction and qualify. You can see in future years, EPA has not determined that these other ones will be particular for bio mass based diesel.

Agenda Item C – Example Compliance Scenarios

Sue Langston of DEQ:

"You have asked several times for compliance scenarios and it is very difficult to do them right now for several reasons. We don't have Oregon carbon intensity numbers yet. We don't know if we are doing one standard for gasoline and diesel or two separate, one for diesel and one for gasoline; and we want your input on the fuel assessments. But you have been asking for information on the topic and it will really give you a good idea of how fuels are used. I think it will give you an example of how fuels assessment would be used. It will also highlight the some of the policy decisions we will asking for your input on in the upcoming months. It will also give you an example of what type of fuel audits could be used to meet standards. So each compliance scenario is just one way of meeting the LCFS standard. We are hoping you will help us develop five different scenarios. Today, I am just going to review how we are proposing to develop the compliance scenarios together. I will describe the fuels assessment and then walk through our compliance scenario examples, one for gasoline and one for diesel.

I am hoping after this you will understand the process we will be using, how to use the fuel assessment, the kinds of assumptions, and the policy decisions. At the April 15th advisory committee, we will be looking at the fuels assessment, we will have a couple of expert speakers, we will be asking for your input in both April and May on the compliance scenarios. Then once the contractor has worked on the compliance scenarios, we will discuss the results. The fuels assessment is going to look at several different things: Current and potential production in Oregon of different kinds of fuels, out of state production, the commercialization status of things like cellulosic ethanol. They will also look at the regulatory context, such as Federal Renewable fuel standards that Wendy just covered, the Oregon renewable fuel standards, and the Portland renewable fuel standards. At that April meeting, we will have expert speakers on things like electric vehicles and CNG. We are working with the Department of Energy to set up some speakers for that and also cellulosic ethanol production potential and other production potentials. So all of that will then feed into a number of assumptions about the compliance scenarios. How much and what volume of alternative fuels will be available, we will look at carbon intensity and we will come up with approximately five scenarios. We will want to get a high and a low range of what kinds of fuels will be available, a high and low range for the use of electric vehicles and the CNG vehicles, hydrogen flex fuels and then also take a look at the RFS2, and Oregon's fair share volumes that Wendy talked about. I did these calculations of compliance with several limitations. Let me mention some of them. For our example, I used assumptions from the east coast and from California, and California's compliance schedule. The east coast thought one possible scenario would be that 4.4% of their fleet in 2020 would be electric vehicles and 4.4% would be plug in hybrid electric vehicles. They assumed an increase in the use E85.

Q: *"Is 4.4% that the total fleet in California or the state fleet?"* ***A:*** *" So I took Oregon's light duty, passenger car fleet which is about 3.2 million and assumed that 4.4% of that in 2020 would be battery electric vehicles and 4.4% of that amount would be plug in hybrids."*

Q: *" That assumption came from where?"* ***A:*** *" The east coast, that is what they used in one of the compliance scenarios. So this would be the kind of thing we will be looking for your input on in April. What percentage numbers should be used for Oregon?"*

Q: *"Clarify again. What was that assumption again?"* ***A: "*** *On the east coast, they assumed in one of their compliance scenarios that 4.4% of their fleet would be electric vehicles in 2020."*

Q: *" That is 4.4% of all cars on the road?"* ***A:*** *" Correct."*

Q: *"Light duty?"* ***A:*** *" So, passenger cars. This was for gasoline consumption. So it doesn't include heavy duty."*

Q: *"And 4.4% additional for plug in hybrid?"* ***A:*** *" Yes."*

Q: *" So that 9% would be either electric or plug in hybrids?"* ***A:*** *" Yes."*

"I'm not saying this is how it would be in Oregon. I'm just saying this is an example from the east coast. You will notice in 2011 we made very little reductions, between 2-5%. This is showing which of these contributes to the reduction. I will be walking through the volumes and numbers. You can see here that plug in hybrids contribute very little. The battery electrics contribute a lot more. The Federal Renewable Fuel standard contributes about 1/3 all the way through. I just

used cellulosic ethanol from waste with a carbon intensity of 16.4 to make up the difference. We will be looking for your input on what is reasonable in Oregon."

Q: *" What is the difference between RFS2 total and cellulosic ethanol? Why isn't cellulosic ethanol part of the RFS2?* ***A:*** *This is above and beyond what the RFS2 will require. So this volume is going to be required by the Federal RFS2, those categories that Wendy talked about, the advanced field and the cellulosic ethanol. This is additional in order to meet the 10% reduction. We will need this much more cellulosic ethanol at 16.4.*

Q: *So will you be using cellulosic ethanol from other areas, besides waste?* ***A:*** *Yes.*

Q: *Just so we understand that, the carbon intensity of 16% is relatively low one?* ***A:*** *Very low.*

Q: *So your volumes could be quite low proportionately if you used some other kind of higher (carbon intense) renewable fuel you would have to get higher volumes, correct?* ***A:*** *So we would need to look at all of that, the plausibility, the amount of ethanol that is being blended and all those issues.*

"So, in 2020 what this means is the cellulosic ethanol at 16.4 that is above and beyond what the Federal Renewable Standards would require would be about 79 million gallons. RFS 2 in 2020 is 105 million gallons of cellulosic ethanol and 33 million gallons of advanced fuels. I think that is reversed, I'm sorry. The electric vehicles, this is about 4.4% of the fleet in 2020 and you can see that electric vehicles contribute some and then the plug in hybrids don't contribute as much."

Q: *For Oregon only? Correct?* ***A:*** *Correct.*

Q: *" I know we are not going to get into percentage contributions at this point. We are actually looking at forecasting, but I am curious why plug in hybrids are so much lower than pure battery electric, since most of the plug in hybrids that will be marketed beginning in 2012, there is actually more vehicle models with more choice, and most of them have a 35-40 mile all electric range. In Oregon, that should be more than enough to handle most of the daily commuting, not rural driving, but commuting traffic. I'm curious about the underlying assumptions on the contributions would be for plug in hybrids. I think you may be grossly underestimating the potential benefit of plug in hybrids. So, I would be curious to see what the assumptions that were relied on."*

A: *"These are east coast assumptions. We can definitely change them. This was actually one year ago and maybe some of things have changed since them."*

"I don't know how much detail you want to get into? Here are the volumes required by year and you can look at these on the web. We will come out with much more accurate RFS2 numbers and then with your help will come out with a better plausible scenario. But does this help give you an idea? So you can see the RFS2 numbers are straight from what Wendy discussed, the federal rule. Cellulosic ethanol at 16.4 increases gradually up to 2015 and then the number of battery electrics increases greatly and then for 2016 and 2020 again the top two are required by the federal RFS 2 and you can see that cellulosic ethanol uses 7 million gallons and this keeps the blended ethanol at 9.9%. So with other scenarios we will have to look at that ethanol blend. So the diesel example, again using the California base and schedule, carbon intensity numbers from Washington and California, and RFS2, I just used the bio diesel carbon intensity, cause that is what East Coast did. There could be other advanced fuel categories. There could be more bio diesel. That is something we will have to take a look at. I also looked at natural gas. You can see here the Federal Renewable Fuel standard contribution from diesel is much smaller than the contribution of the RFS2 and gasoline scenario and that is because that bio massed based diesel required volume is very low. And then I just took bio diesel yellow grease average from Washington. So, one question you will be looking at is there this much yellow grease in Oregon. These are the types of questions you will need to evaluate to develop the proposal. Again, here are some numbers. RFS2 does not really contribute that much to the diesel and the blend here is increasing to 4.8 in 2015 and then goes up to 8.4 and there is obviously some issues here with this scenario. There might be other scenarios that don't have the same issues. Any questions?"

Q: *" Why on the diesel side did they not include hybrid technology?"* ***A:*** *"This is the east coast assumption. We can do whatever we want."*

Q: *" There is more diesel alternatives being designed for hybrid, would you like that information?"* ***A:*** *"Yes."*

Q: *"Do you have any electric vehicles in there? Did you?"* ***A:*** *" Not for the diesel scenario because the east coast scenario had only compressed natural gas. We can do that and it sounds like we should."*

Q: *"Do you have an idea how many vehicles in that CNG volume?"* ***A:*** *"No, we don't."*

Q: *"For scale, California's current grid mix of the carbon intensity would be 41 and if you would look at the marginal grid mix, which is mostly natural gas and some renewable, then you are down to 34.9."* ***A:*** *"Compared to CNG? Good."*

"Lastly, we will have some experts at the next meeting, which Wendy and Rick are setting up. And so, if there is any questions that you want to put on the list in advance, let me know and there will definitely be time for questions. Anything else?"

Q: *"There are lots of questions that will come up with the compliance scenario assumptions and I think it is probably helpful for us to check in on it to remind us that there is a schedule for looking at these issues as we get into it. I think it will take quite a bit of discussion, particularly on all of the assumptions. Clearly you change the assumptions and all of a sudden the scenarios change dramatically."*

"It is really useful to hear that, if you have any information on that we'd appreciate you sharing it."

Q: *"Like Sue said we will email the agenda and keep updated who our speaker panelists are and we can t-up some questions early. This would really help us have a productive discussion at that meeting and get us thinking about our favorite questions?"*

Q: *" Do you know how many compliance scenarios the east coast has analyzed and how many California has analyzed? And are we going to do our compliance scenarios in coordination with Washington?"* ***A:*** *" East cost did, I believe, five and California did seven. And, we could coordinate Washington, as it looks like they have been a little ahead of us on some scenarios. We could certainly talk with them."*

Q: *" Maybe we could find out from Washington what their scenarios look at and get some input. We will have a presentation from Washington today, don't we?"* ***A:*** *" Yes, at 4:00 o'clock."*

John: *" I'm curious in these scenarios how deep they go. For instance, in the construction industry that I represent you have legacy fleets, diesel tends to create that, that's the up side and down side maybe. What I'm trying to figure out is, are you going to dig deep enough to understand…., as a part of the compliance scenarios. It is one thing to have availability and it's another thing to be able to afford it, and how deep are we going to go. Is that kind of information available? Because, part of the compliance scenarios is not just the standards, but the schedule of implementation and the availability, but also the ability to actually purchase equipment, particularly with a lot of legacy fleets."* ***A:*** *We will try to capture all these issues in the economic analysis.*

Q: *"So do you think it will come in the economics analysis part?"* ***A:*** *" Yes."*

Q: *"I have one request and one question. First, can you post the scenarios that the east coast states and California have to the website. Second, are you limiting the compliance scenarios to just the on road market or are you also including off road, which is where a lot of the heavy duty alternatives for diesel are. Does that make sense? I'm curious are we talking just on-road or are we including both on and off road?"* ***A:*** *" Both."* ***Q:*** *" But not log or farm trucks?"* ***A:*** *" Right."*

Q: *" I'm wondering what we are going to be doing with the electrification of trucks idling? Most of the … we have been dealing with are going to be used to move the truck as well as how we deal the truck idling itself. I don't have a clear answer, but maybe the east coast or California dealt with it and you can look and see?"* ***A:*** *" We can look and see. We are also going to do an electricity specific session."*

Comment: *" I have some information on that. USDOE provided a $22 million grant to deploy 50 electrified trucks stops around the country and most of them will be concentrated on the I-5 corridor initially to look and see if they can make it affordable. There is a joint venture there that the plug in group encountered, called Shore-Power. What you have to do is find concentrated truck stop areas, you have to deploy it there and you have to make sure it is onboard the equipment. So that will unfold, but it is very doable. It is matter of taking the time to get the infrastructure."*

Comment: *" So I know it is doable and we are getting the money to do it, and that's why I raised the question, because we are currently burning diesel to keep the engines going and if we switch it to electric, it is a form of electrifying the truck."*

Comment: *" I think people welcome that even in the industry, but it is going to take a while for the technology to keep up. It saves everyone money."*

Comment*: " I was just going to throw in our two cents, because we view it is a form of electrification on the truck and it is displacing fuel that would otherwise be burned in that truck."*

Comment*: "So it's transportation fuel. It involves the vehicle's fuel consumption, maybe not used for propelling the vehicle but it is certainly used by the vehicle."*

Comment*: "Like on the refrigeration trucks, they have refrigeration units consuming diesel and that can be plugged into distribution centers. It's on its way."*

Frank*: "Just a little more follow-up. You mentioned earlier that you are going to have the compliance scenario and then that would feed into the economic scenario, but to add onto what John said economics are going to drive what is doable and feasible if anything. So we need to have this complete feedback loop where the economic scenario feeds into the compliance scenarios."*

Comment*: " One area that I would recommend that we look at, is increasing the ethanol blend from10% up to as high as 15%. There is currently a waiver now and they anticipate making that rule final sometime this summer, looking at the feasibility of increasing the ethanol blends from 10% up to 15%. So on behalf of the ethanol industry, we need to look at how the scenarios would change if we are able to put more ethanol back into it.*

Q*: So Sue, you see 9.9% across until 2020, right?* ***A****: Yes.*

Comment*: NEP is looking at up to 15%, but there could be an intermediate step that they determine going forward that could be 12% or 13%. But I think we do need to look at how these numbers can be affected by higher levels.*

Q: *Sue, Just to complete that on the diesel side, you had it as an increasing percentage over time?* ***A:*** *Yes.* ***Q:*** *But that is not a result of any mandate that is totally as a result of the RFS2, right?* ***A****: Yes, the RFS2 and the fact that it was based on my research on yellow grease.*

Q*: I think that, and correct me if I'm wrong, but there is no federal regulation on bio diesel, but there are probably operational limitations, right?* ***A****: Yes.*

Comment*: A couple of quick points on the bio diesel. Remember, we have as part of Oregon a certain … to branch out to B5 blend and B2. Then also keep in mind, that a lot of the key users and the individual users of bio diesel use higher blends than B5 and B10, actually even B20 . Here in Washington and Oregon we have the largest blend of B99 in the country. This is important, especially when we talk about legacy fleets.*

Dave Patterson*: One comment to respond to the biodiesel and the ethanol. The one thing that complicates that is those are going to both be in only limited fleets. Any blend higher that 5% is going to be in a very limited fleet for bio diesel and on the ethanol side for B15, EPA is considering a limited waiver for a limited number of model years of vehicles. That is going to be on a subset so when that calculation is done I think the EPA is going to use model year and later models years now so it is going to be on subset fleets.*

Q*: Sue, this obviously also goes into the numbers on what your assumptions are going to be, as far as what kind of volumes you might see, right?* ***A****: Yes.*

Public comment

Carrie Atiyeh of ZeaChem introduced herself to the committee and shared information about Zea Chem's plans for a demonstration plant in Boardman, Oregon. The plant will produce about 250,000 gallons of cellulosic ethanol per year, using mainly hybrid poplar trees grown by nearby Green Wood Resources as feedstock. ZeaChem's process can accommodate a variety of feedstocks, and can produce industrial chemicals as well as fuels. Factors in their location decision included the proximity of Green Wood's poplar stands, as well as transportation connections at the Port of Morrow and the state Business Energy Tax Credit.

"I'm Carrie Atiyeh, Director of Public Affairs from ZeaChem, based in Denver, Colorado. We are under construction for 250,000 gallon demonstration scale cellulosic bio refinery. It will be located in Boardman, Oregon and we will have the first unit operation coming on line by the end of this year with full completion of cellulosic ethanol production by approximately the middle of next year. A few distinguishing and unique factors about ZeaChem technology is that we are feed stock agnostic. On the front end, we are able to process a number of different cellulosic feedstocks and then on the back we are able to produce a full range of different products, including intermediate chemicals as well as fuels. So we have a lot of flexibility. Once we are able to demonstrate our technology at the demonstration scale, we will begin engineering and plans for a commercial scale facility of 25-50 million gallons per year of cellulosic ethanol. At this time, we have completed a life cycle carbon analysis taking into account our feed stock as well as our conversion technology. It is optimized for commercial scale facilities like the Denver plant. We won't get quite this level of production, but as we look to full scale commercial production our green house gas profile is about 94-98% less than conventional gasoline. That is direct emissions only and does not include any potential indirect emissions. Some of the factors that contribute to that very low carbon profile are that we are focused on using dedicated energy products and that is our primary feedstock strategy. We are working with Green Wood Resources, whom many of you may be familiar with. They are based here in Portland, and they have a very large poplar tree plantation in Boardman, Oregon very close to where we are building our facility. So from a carbon intensity standpoint, there is very low carbon profile feedstock. The trees grow very quickly. They are harvested at about three years in age and they are cut above the ground so they are maintaining the carbon in the soil and the trees re-grow. We can do five cuttings before needing to replant. So the green house gas reduction profile is quite significant. We are looking to supplement dedicated energy props with additional residuals, whether that is potential wheat stock from the agricultural community or potential forests. I do have a brief one page document that if anyone is interested or I can give you more information later, but I just wanted to thank you for the opportunity to participate in this process and Harrison is representing us going forward on a full time basis. I would like to thank you for listening and I appreciate being here today."

Q: *" What are the physical byproducts of the cellulosic ethanol?*

A: " *The process is unique because it is a combination of bio chemical fermentation as well as chemical gas…(?). We are converting 100% of the sugar strain through our fermentation process, using the natural occurring organism called acid (…?). It does not give off any CO2 during the fermentation process and we get a 100% carbon conversion from your sugar strain through fermentation and then it will be gasified and we will be stripping hydrogen off of that sim gas and combining the hydrogen and the fermentation strain to get the ethanol."*

Q: *" What kind of efficiency would you say you get?"*

A*: " From a yield perspective, because we are combining fermentation and the gasification we are able use about 100% of the feed stock, we are able to get between 40-50% more efficient than from fermentation alone or gasification alone. That translates into about 135 gallons of ethanol per ton of feedstock compared to about 90-100 gallon tons."*

Q*: "Would this process be regulated to large scale or could it be scaled down to something portable?"*

***A**: "The demonstration scale facility will be 250,000 gallons and that is a small facility, but we ultimately look for large scale commercial production and being able to co-locate the bio refining facility with our dedicated energy crop so that we have a very tight logistics lines in terms of transporting feedstock to the bio refinery and by having a dedicated energy crop, and by having a long term fixed priced contract for our feedstock so that we are aware over time of our facility feed stock costs. "*

***Q**: "Why did you pick Boardman, Oregon?"*

***A**: "Very good question and I get that quite often. There are several reasons. Green Wood Resources already has a poplar plantation in Boardman and they are working to go to bio mass for the hybrid poplar tree. So if we think about the chicken and the egg of all of this, we need the feed stock to know that we can convert it into the fuel and the feed stock producers need know that there is a market for bio-mass as well. So it really helps that the land is already aggregated and has about 25,000 acres of poplar trees already in the Oregon area, so from a start up logistical standpoint it was helpful to already know that that feedstock source was already available. We are excited about the Port of Morrow and having the access to both rail as well as barge transportation. It is very helpful in terms of thinking about how we off take, in terms of fuels as well as chemical products to get those products into the market place. And then I know* the BETC *has gotten a lot of negative attention recently, but I would like to say that that is a success story when it comes to the BETC. We do have a preliminary certificate from the Department of Energy for an R&D BETC. As we looked at potential other sites around the country, we looked at the Northeast and the Southest,, we were looking to leverage the dollars that have already been raised from our venture capital partners along with additional State and Federal assistance. And no states could compete with Oregon in terms of the incentive provided in terms of its business tax credit. So that was very significant for us. I will also note that we have just been selected for a $25 million dollar grant from the US Department of Energy. We are one of 19 bio refinery projects, and that will go to support our operations at this facility as well."*

Q: " You said that you were going to recycle your hydrogen into the fermentation from the Sim gas. I was wondering if you were going to upgrade the carbon dioxide as well as other chemicals."

A: " That is a really great question, that I will have a more technological person answer. But, in terms of the gasification, what I can tell you is that the hydrogen goes directly into our fermentation strain through a process known as hydrogenation. It is already used by industry today. The remaining sim gas and the components that come off that gas will be used to provide the power necessary to run the facility. So that will be as close to a net zero energy consuming facility as possible."

Agenda Item D – Oil Industry Presentation

Gina Grey of Western States Petroleum Association and Jim Lyons of Sierra Research gave a presentation outlining the oil industry's experience and views about the California LCFS program, and shared their perspectives on Oregon's situation with regard to GHG reduction policies and programs (presentation is available on DEQ LCFS advisory committee website). Following the presentation, representatives of three companies shared their perspectives and answered questions. The panel included: Ralph Moran of BP, John Reese of Shell and Nick Economides of Chevron.

After introductions were made there was a preliminary question:

Q: *"I would like to ask an initial question. Is the purpose of this presentation to inform the LCFS process or how we would implement the rule or to say whether we should do it or not?"*

Gina: "*That is a very good question and I think you will see elements of both, to be honest. This is the WSPA perspective and we have been given the opportunity today to talk about our perspective. You will hear a little bit of both and the three Companies will come up at the end and help provide a little more specifics. Because of trade association we really can't talk to some of the specific business impact issues. So they may be able to inform you a little bit more on those types of issues, if you have questions along those lines.*"

Frank: "*We invited WSPA to make the presentation. I do realize that we have said to the committee in the past that we are not asking the committee should we or shouldn't we adopt a low carbon fuel standard. We have input on the 19 policy questions that we need to assess in order to propose the regulation. That said, WSPA and the petroleum companies are the most affected by this regulation. As you know many regulated parties are opt in parties, but the most affected I think are the petroleum companies and because of that and the fact that they participated heavily in the development of California's regulation and have extensive experience I think that some of their perspectives will be helpful for the committee. So just keep in mind, we know that we are not asking you and we are not asking WSPA whether or not we should propose regulations. That will be a question that DEQ's commission will ask when this committee is done. It still will be helpful I think in informing the discussion to just get the perspective of WSPA and the petroleum companies.*

Gina: "*Thanks for those additional comments too. Please keep in mind that we have survived, survive might be a bad word, but we have survived for two years plus in California in this process and as you pointed out in California our industry is the responsible party, which is probably why we have pretty strong feelings about it."*

The presentation was then made. (This presentation is available on DEQ LCFS Advisory Committee website)

Questions and comments raised during the question-and-answer period included:

Q: " *I would love just to hear how you are thinking about reducing carbon emissions into the future and how your corporate strategy will handle that, whether it's through new kinds of production or other technologies; I am curious- I don't have any knowledge about that."*

John/Shell: "*I'll speak to that. Shell is very interested in pursuing technology with carbon capture and sequestration on the stationary side of the equation. And we are very interested in bio fuels as well. We are probably the biggest lender of bio fuels in the world. We are invested in hydrogen companies working on cellulosic ethanol and then, also, we are going to invest in Brazilian sugar cane ethanol as well. There were just announcements on that a couple of weeks ago. So we have, I think, played a big role in ethanol here in the US. When ethanol came to California, in the mid 90's, we set up basically a hub system. We set up the unit trains, which would bring the ethanol from the mid west more cost effectively. And then we set up similar hubs in Atlanta and New Jersey."*

Ralph/BP: "*I'd say for BP, I tell people that we have acknowledged the climate change before the climate was cool. We have been involved for 15 years now. We have made huge investments in alternative energy side, including wind, solar and hydrogen power. But on the transportation side, I think we are focused on bio fuels. I think, like Jim and Gina said, that is driven by the RFS and RFS2. We made a $500 million investment down at UC Berkley in the technology. BP's bio fuel standards are really three fold, including first, cellulosic ethanol, secondly commercializing …(?) and, third, sugar cane ethanol.*"

Nick/Chevron: "*I'm going to take a little broader angle in responding to that question. I think from our perspective anything that turns out to be necessary, cost effective, and based on sound science should be on the table. Right now that is mostly bio fuels and I think that is why my mentioning that first, is practical and that is actually going to come in and make an impact in the short term. That is not to say we are all in the business of watching technology evolve. We are watching the technology change over time and some of us are in the business of forcing technology to change. Not so much on this side of the fence, but you know we need to be aware of these things before we go forward and try to do the best with what we have as tools. The problems we see are in areas such as, and I don't mean to belabor the point, where electricity becomes a huge component of a program such as this. We are really the regulated party and we have no way, as it is not "our business" of really controlling our destiny. I think you can understand really how uncomfortable one can feel placed in those circumstances. The examination of what's necessary, what's cost effective, and what's based on sound science is the starting point and clearly there is an awful lot of work that goes into these studies to get to the bottom line."*

Comment: "*I would just add that, while it is great to have three individual companies on the panel to answer questions, we are restrained by anti-trust laws from saying much. Similar with these folks, while they may have a lot of plans on the books, they probably can't divulge much information at this point of the process. I appreciate what they provided with their public statement as to their public stand on things. Granted there is probably a lot going on behind the scenes, we just can't express that."*

Q: "*I have a question about slide #2. Could we put it back up? So this is more of a comment but it will lead to a question. When I looked at the two columns, low carbon fuel standards on the left column and the other on the right, and I clearly, as Gina was saying that west coast preference would be to stay on the right side of the column rather than the low carbon fuel side. But then it seemed to me a lot of Jim's presentation is about why none of those things on the right side are feasible and*

aren't going to happen. I do want to ultimately ask Jim about that, but I do just want to mention the things we are doing on the right hand side. Specifically with regard to vehicle programs, as you mentioned, when Oregon adopted California Low Emission Vehicle Program, representatives of the auto industry made a very similar presentation to the one you have made here today about why we shouldn't do it and specifically talked about the issues being inconsistent with the federal programs and the technology and the ability of the manufacturers to comply and so forth. Ultimately the reality is that our opting into CA's program along with 13 other states ultimately led to a federal program that by 2016 will achieve the reductions that will be achieved through the California program. So, often it the state's actions like what we are doing with the low carbon fuel standards that spur the federal government. We do recognize that there are certain economies of having a consistent federal program and we are a big supporter of the advances on the federal level. But it has been our experience that without states innovating, then: 1). the federal government has difficulty moving forward, and 2). the programs become stagnant. One of DEQ's primary interests in this program is to continue encouraging the development of further federal programs and I am quite hopeful that if all the east coast, Oregon, and Washington adopt a program similar to California's, we will see a national low carbon fuel standard. That could potentially become an outcome. I want to note that we have worked very hard on the vehicle side of it and we have adopted those regulations. With regard to the fuel consumption side, Oregon also adopted legislation in 2009, HB 2001 and another element of HB 2186, designed to encourage transportation planning to reduce vehicle miles traveled. That is a huge uphill battle as well. Our friends at the Department of Transportation and Land Conservation and Development Agency also have worked very hard to reduce vehicle miles traveled and with the growing population it is difficult even to achieve the VMT reduction per capita, let alone, total reduction in VMT. But, we are going through a planning exercise now where we are going to determine how much VMT reduction is necessary to achieve the State's greenhouse reduction goals. On the transportation side, and assuming that we are able to implement advanced vehicle and fuel standards, the question in that analysis is "What would the emissions per mile for vehicles be and how clean will fuels be in the year 2020 so we can calculate how much VMT reduction it would take to meet the State's goals. My point in saying that is just to note that this really isn't an either or. That is, we are going to have to do everything we can on the fuel side, the vehicle side, the transportation side and land use side to have any hope of coming close to achieving the State's goals. All of these elements are in place, but what I think still is missing is without a low carbon fuel standard is the incentive structure. By establishing a requirement, I will note that the low carbon fuel standard is a performance standard and is not picking a winner or loser, although obviously the carbon intensity values will influence which fuels perform well. The purpose of the low carbon fuel standard is to avoid specifying a particular solution. We are not mandating electricity. We are not mandating hydrogen. We are not mandating bio fuels or any particular bio fuel. But we are establishing a performance standard and that is the exact opposite of picking winners and losers. What it does though is it creates a mandate for the fuel distributors to actually achieve those changes in carbon intensity, thereby creating markets for all of these other types of fuels. So, sorry for the more comment nature rather than question nature, I didn't want to comment on every slide. I think what you pointed out here is really why we need a low carbon fuel standard. The question I want to ask, to Jim, is on slide #12 where you showed the bio fuels that we are going to be getting from RSF2, and I didn't quite follow were you were saying that just by implementing RFS2 that we would be meeting the 10% reduction, and we would be able to achieve the low carbon fuel standard. Do we have one compliance scenario that shows don't do anything in addition to RFS2 and we will be meeting the 10% reduction or are we just noting that this is the amount of bio fuels coming from RFS2?"

A: "*That is a complicated question, because it requires knowing exactly what the carbon intensity values of each fuels that you would be using. But I think if you look at the EPA numbers, then the answer could possibly be yes."*

Q: "*Just so I understand the answer. Yes, meaning RFS2 will be enough to meet the 10% standard."*

A: "*Well I can't say that definitively, but if you look at the magnitude of the reduction and the carbon intensity associated with some of the bio fuels in the final rule and you look at the volume of the bio fuels that are projected to be required, then I think it is possible that the answer could be yes. We need to do an analysis on this."*

Q: "*So hypothetically if it is yes, then does that mean, "Great you are in compliance. You don't have a non compliance problem."*

A: "*Again, it depends on what the carbon intensity values are. It also was discussed earlier that the State action could lead to a federal program.*

Q: "*There is also a question of feasibility here. One of the slides that was shown shows that EPA may have to adjust down the cellulosic requirement. I noted that one of the slides you showed earlier you actually project even more cellulosic that what was required under the RFS. So if the RFS is not achievable or feasible according to our own government, then where are even more cellulosic fuels going to come from. I think that is my big concern about the layering of another program on top of the RFS; there needs to be realistic and achievable standards and I will just make a point about electric vehicle, too. I*

think the numbers you presented about the number of electric vehicles is extremely optimistic and may be not be feasible at all. I think we are starting from this problem at the opposite end. We start with a 10% reduction and then you figure out what is the carbon intensity of the different fuels and then you calculate how much of these different things we would need. I would suggest that it is actually better to do it different than that. You figure out what the carbon intensity of the fuels are and the vehicles, etc. and then you look at what is realistically available in the time frame. Then you calculate and say what the percentage would be. That would ultimately be a much more achievable result."

***Comment**: "I want to address your point about the low carbon fuel standard. Certainly it can be designed in a way that it does fit, you can follow the California method. The clearest example I can give you. If you set a performance standard for diesel, displacing gasoline will meet that performance standard. And it is not allowed in the California standard. On the other hand, coal. Utility uses coal to produce electricity. That captures and storage qualifies for low carbon fuel, because it contributes to the average grid."*

***Nick/Chevron**: " I'll put it even more bluntly. You all will get some nice Christmas cards from Brazilian sugar cane growers should you go forward with it. That is what you are doing. You are writing a full employment bill to Brazilian sugar cane ethanol. If that is not picking winners and losers, sorry, then I don't know what is."*

***Q**: "If you look at the carbon intensity of different fuels for us there is a progression where sugar cane performs better than corn and cellulosic performs better than sugar cane and then you look at what is realistically available right now. Cellulosic is really just in R&D - the pilot planning stage. So that is not realistically available in short term. So, you know, the low carbon fuel structure does incent sugar cane ethanol over corn based ethanol."*

***Nick/Chevron**: "You can do five different kinds of potential scenarios, if you want. But there is very little need for that. Once you do the CI determination properly with the available analysis that John suggested you will see that there is really not a whole lot of options as far as compliance is concerned. Even though on paper a regulation may be fuel neutral, performance based, etc., etc. in practice, in its implied form, it because something very, very narrowly defined and without a whole lot of latitude in terms of what is available to do."*

***Q**: "Because of scale of emissions?" **Nick/Chevron**: " Scaling of what?"*

***Q**: "Production?"**Nick/Chevron**: "Production of what?"*

***Q:** "I'm asking…..you say there is a narrow thing when you get to availability…*

***Nick/Chevron**: "Availability. If you start doing the Math you will see that there isn't going to be enough of the alternatives as presented on paper. The infrastructure will not allow electricity to be as widely penetrating in the market as you've shown. The infrastructure is a major issue. Technology advancement will not be there to permit cellulosic alternatives in the early time table that one would hope would be available and once you start going down that line you wind up with a scenario that says, " Okay what can I do. I can do the lowest CIF that I can get my hands on in a sufficient quantity. And I can do the lowest bio diesel CI that I can get my hands on, on a commercial scale, and you can move in those fronts and that really isn't five scenarios. That is my point. That is one. And that is the realistic scenario of what we are facing and what we are considering at this point in time. Now maybe the technology will evolve to the point that the cellulosic bio refineries will come in and compete on a price structure economics and become viable, self-sustaining and flourish. Because that is what it is going to take in the marketplace for that to produce the volumes that are needed. This is why the EIA is saying that we are not going to get there. Because we are not seeing the volumes coming along in the time tables -- The train is moving slower than we would all like. And trying to sit in a forum and create scenarios that seem equal on paper isn't going to change the fact that in reality it won't be equal in cost, time table for implementation, effectiveness in reducing green house gas emission, etc. etc. etc."*

***Harrison**: "I wanted to direct back to slide 10 to show the comparison in EPA and life cycle green house reduction. I think the point was there was a big range and a lot of uncertainty with it and that seemed clear to me as well. Have you looked at EPA's final indirect land use numbers. If you were to take away the assessment on indirect, how far apart would they really be? That is a question for you, because I think I know the answer to that. What I'm trying to do is look at this and isolate where the complexity and uncertainty is you are describing; and where isn't it, in terms of CI."*

***A**: "I think as a general proposition I haven't gone through the direct CI numbers*

***Carrie**: "Two quick comments and then a question. The one is on the cellulosic feasibility. The RFS2 set some very challenging and aggressive targets for producing cellulosic ethanol. The industry will not meet those early targets, but I think what's important for all of us to keep in mind is that for this industry that is just getting under way we need those clear, long term targets. We need to know that the product we are going to be producing has a market. It is what our investors*

and our financing partners need to know, that their investment is going to pay off. So while we might not meet those earlier targets the point that we all need to keep in mind is that this is long term and we are working to get a sustainable amount in 2022. It is a new industry and I think we are going to see that curve, which is what we saw with the corn ethanol industry. It took a few years for the corn ethanol facilities to get up and running. Once that technology was optimized and economics were optimized, we saw tremendous growth in first generation ethanol production. And so I think we can look to that as a model for the development of cellulosic technology. On the winners and losers in the carbon analysis, one important point to keep in mind on the indirect land use change is that indirect land use is focused on bio fuels and if we are going to be looking at indirect land changes we need to be looking at indirect land use change for all fuel, for electricity, petroleum and whatever it may be. There is a lot of uncertainty about indirect land use, and it's controversial as to whether we use it or not. But let's keep in mind that these fields are being assessed on an equal basis, whatever that may be. The question that I have on slide #16, a question for Jim, is that there is obviously some very different conclusions that were made on the cost of the impact of the CARB's low carbon fuel standard and that probably comes back to different assumptions that were used to model these impacts and I think it would be helpful for us to have a better sense of what some of those key differences in the assumptions that were made.

***Comment**: "If we can get the presentation back up. We have a slide that shows the table that lists that. They are in the backup slides."*

***Q**: I would like to address by questions on Carrie's comments about whether we can meet the targets in RFS2 and the challenges. I think the question appropriate here is, "Will the low carbon fuel standard provide and implementation incentive and is the cost of low carbon fuel standard worth any implementation condition? It would be interesting to hear your perspective on that."*

***Carrie**: "At this point, I don't think we have a very clear sense on that, because this is a very new policy and what it is mostly focused on is the renewable fuel standards since that policy was put into place the federal legislation in 2007 on low carbon standards and Oregon has been doing that."*

***Q**: Okay, I have broken these cost categories down into six categories. There is feed stock costs, production costs value of co products, which is the benefit, distribution and marketing costs, and federal tax credits. Where you see the big differences are first in the feed stock costs. Most of the feed stocks are in the carbon analysis are assumed to be free. If that is the case, then it certainly lowers your feed stock costs. Capital amortization is really a difference in the interest rates that were assumed. They assumed a very low interest rate and we assumed a higher interest rate that we think is more representative of the return that people would have to be seeing on this type of investment to induce them to make it. And then the federal tax credit. We are talking about a 2020 cost here and what we assumed is that the current tax credit that expires in 2012 would be extended for another 8 years and locked at its full value in the carbon analysis. In fact, the fuel based petroleum price that we were looking at are again 2.70 a gallon and so if you look at the difference between those two costs I think you can understand why it is that they are kind of equal but in the opposite direction that is relative to zero."*

***Q:**: "Just so I understand that piece, in terms of cost per gallon equivalent, is that a cost of traditional gasoline today or 2020.*

***A**: "The cost is the cost. The price of the gasoline as a way to adjust for the difference in energy content between ethanol and gasoline, so this is putting it into terms of how much you are paying at the pumps right now for the given amount of energy."*

***Q**: "For the energy?"*

***A**: "Right, so we don't have to adjust for the fact that the ethanol has less energy per gallon that the gasoline. That is all that means.*

***Q**: "Okay, this doesn't have anything to do with forecasting or guessing what the cost of petroleum gasoline will be in 2020?" **A**: No.*

***Q**: "You mean today's petroleum prices or 2020 analysis?"*

***A**: "This is the cost to produce ethanol". **Q**: " But that petroleum goes into the production of ethanol?"*

***A**: It does and its going to part of the production costs and we essentially used the same kinds of assumptions. To say we disagreed with our costs estimates of petroleum that was also kind of used as a mid point for whether or not fuel costs will be increased or decreased in the slide that I showed.*

***Q**: " So, on slide 8, I just wanted to make sure it was clear on the things that Oregon is doing. I think Andy hit it on the head when he said that a lot of effort is going into reducing the green house gas emissions from transportation and we are doing quite a few of the things. The ports have an emphasis on reducing green house gas emissions and toxic pollution as well coming out of diesel engines, both with the trucks and with the ships. We do have the BETC, which provides some vehicle rebates as well. It seems to me that the driving point here is that these other things on green house gas emissions and that is what our goal here is. And if I am correct you, Shell, BP and Chevron supported the low carbon fuel standard as it was being considered by California and their position seems to have changed now , but I'm wondering how much you supported these other provisions as they were being considered as well. "*

***A**: "We did not support these at all. We think the federal alternatives can meet the same objectives. We can agree with the goals. We think there are better ways to do it. What we have been talking about is a three pronged approach. 1). The RFS2 could staff the innovation and we don't think there will be any implementation incentive provided by low carbon fuel standard, 2). Put an economy wide cap and trade program in place that includes fuel emissions. That way you make sure you get those reductions, and 3). A specific policy aimed at the non-liquid fuels. Because as you have said we don't think it is appropriate to regulate us to see these other fuels come on the market that we don't sell.*

***John/Shell**: "We did not advocate for the low carbon fuel standard in California. We wrote, I think, four different letters to CARB where we raised a lot of concerns about a lot of different things in the rule."*

***Q**; "And your position on the other topics?"**A**: "You know, I would just have to get back to you on that."*

***Gina**: " I will just tell you that WSPA-wide, our 20 companies that we represent, did not support the …(OEL?). The goals and the program itself is not final yet. I don't think that OEL has approved it and there are a lot of details still to be worked out. So to sit here and say we support or don't support that program. We don't even know what it is yet to be honest and it is evolving daily."*

***Q**; "A little bit of follow up on that, because you had three different slides that talked about options that are better than the low carbon fuel standards. Does WSPA lobby against any of these alternatives that you are saying in here are better."*

***Gina**: Not that I am aware of. I don't speak for the entire petroleum industry because we just represent the west coast, because we are based on the west coast. The American Petroleum Institute…*

***Q**: "I'm just asking?"*

***Nick/Chevron**: "In fact, if I may jump in here, I know this train is quite a ways down the track, as far as what has been done, but if we take a step back in the room for a minute and think about green house gas reduction. The idea of separating the fuel from the vehicle and artificially attempting to address each one individually is really an artifact of the facts On moving forward, what we have in front of us is a system, fuel vehicle system. To get advances in technology to reduce pollution, criteria for pollutants, and green house gas eventually appropriate fuel needs to be tailored for those engines, for those emission systems to become possible and viable. It is difficult to credit the fuel in that scenario. It makes the engine performance possible. The air quality benefits are accrued to the engine program, and as a result there is very little at that point that gets credited to the fuel changes that were made to bring about the more innovative technology. It really is a system. The auto makers will tell you the same thing. It is not just us. In the course of examining that system, the second criteria of cost effectiveness needs to come into play. What makes more sense? To reduce vehicle miles traveled, to implement better controls, to get better standards, to change the fuel mix? What makes sense? And in the analysis, we have to answer the question of what makes sense. And I will close with this. Sound science should be the guiding principal. You can't forget that. It is easy to have a goal in sight and to in the words of Sherlock Holmes essentially twist facts to suit theories rather than the either way around. If we are going to do it right, let's do it right. Scientifically. And it might take longer. I don't beat CARB up for taking time to finalize some of these things that need further examination. I'd rather have quality products come out of the regulation than a regulation that brings something out quicker but that may not be of the same high quality standards. The assumptions are critical. The modeling that you will do, the assumptions drive the results essentially."*

***Bob:** The first comment I was going to make, I actually do concur with the notion that we shouldn't necessarily assume that there can be very significant electric vehicle penetration as one of the chief ways to achieve compliance. So my thinking is when the group develops compliance scenarios there should absolutely be at least one, two or three scenarios that really do not have significant penetration of electric vehicles. The wild card to me, which isn't really addressed in the presentation, is the plug in hybrid electric vehicles, which would still use fossil fuels and then on occasion tap into the grid to be able to provide some amount of electricity fuel usage. But even in that optimistic assumption, I still think we ought to have a compliance scenario that assumes plug in hybrid vehicles don't achieve significant market penetration. What would also be*

significant to see is whether the RFS2 is enough to actually get you really close to achieving low carbon fuel standard by itself without these other vehicle technologies. And if you can get these other vehicle technologies off the ground well then that would just be icing on the cake. The reason I am cautious, I did work on the different programs and what we found is that if you have government and utilities and entrepreneurs supportive you are really at the whims at the auto manufacturers. Circumstances change now that GM is a branch of the federal government. So who knows they might actually continue to market their electric cars rather than taking them into the Arizona desert. I agree with WSPA that at least one of the compliance scenarios should not assume significant market-penetration during this time period for electric vehicle and plug in electric vehicles, and then let's see what compliance would look like. The other comment that I sort of took away from the presentation was, which I do philosophically agree with, and I think we should have this conversation later. I know where John is and that is the separation of diesel and gasoline. I do think that that is something this group could explore. I don't think we necessarily need to agree with California's decision to have a low carbon fuel standard for diesel and for gasoline. I do see a lot of innovative vehicle technologies, especially in Europe, where diesel is the preferred vehicle fuel for light duty vehicles and they do have much better fuel economy and much lower tail pipe emission standards as the result. But the objective here is to reduce green house gas emissions, again, for the flexibility of the lower carbon fuel standard for diesel and gasoline to be combined together. That would be an interesting conversation that this group should have. And my last comment, I would say that on the WSPA presentation I'm sympathetic, but a lot of what you described in the presentation sounds very familiar to what we as an electric industry constantly adjust our renewable portfolio standards. It is a requirement that we have to reduce the environmental impacts of our retail product over a period of time. Where I agree with your angst is on what the compliance schedule and target should be. And so it would be interesting for me to hear from you guys on what should be a more realistic schedule and target for low carbon fuel standard rate of decline. Because I see they made it pretty generous in earlier years and more aggressive in later years and that tends to be how the sector agrees with the RPS on the design because it takes a lot of time when they apply the analogies that you brought up of Brazilian sugar cane. For us the analogy is utility scale wind. That is the lowest cost. It is available. Everyone is going after it like gangbusters. But at some point, we can't do any more of that due to transmission and we are going to have to invest in that transmission. It will go further up the supply chain and start- do more geo thermal and bio-mass and other alternatives. So I see some parallels here to complying with the low carbon fuel standard to what the electricity sector will be obligated to do under renewable portfolio standard and if there is feedback from WSPA on the rate and the target, I think that will be really instructive, because that to me is also not a foregone conclusion. And that is some insight that I think you guys can really bring to this group is what would be appropriate objective, and not necessarily a straight line. We heard DEQ offer a very high level and then have a pretty steep drop off the closer you get to the climate target. Is there a more realistic rate that you guys could suggest that matches up more closely to what the interim target should be, more closely what the markets should be? And then where you think subjectively the drop off should occur and to make the final target. That was just my curiosity."

Mark: *"I have a few questions, starting with you Nick. Sound science is always a good thing, but often it is in the eyes of the beholder. Do you consider, and you are shaking your head, which is good, the application of the NFS 2…"*

Nick: *"After spending five years in Washington, DC, I'm use to buying into that opening line."*

Mark*: "Okay then my questions for you is, do you consider the application of indirect land use in the California regulation sound science."*

Nick: *" Yes. It's not a perfect tie in. It still needs to be worked on, but we at Chevron, think that some component of recognizing what the land use terms do recognize is necessary."*

Mark: *"Just curious to get your personal opinion."* ***Nick:*** *"Can't give you my personal opinion." (laughing)*

Gina: *I just want to respond a little bit of that from an industry perspective on what we said in California. I would say that in general I think there is a sense in the industry that some elements have some validity in adding into the overall picture. Some of our companies feel like sustainability is actually more of the element and there is different ways of weaving that into the picture versus indirect land use. So we have some disagreement right off the bat with that. I think it comes down a lot to that we will see over time what land use group and they have all those experts talking to each other versus what the EPA agency came up with. But, science, as you say, improves over time, and we will work out things. But I think the fear in the industry is, depending upon what those CI numbers are, those numbers drive things horrendously. It will determine the outcome and that is a big fear. Because I hate to say it, John and he said it inside the room, but R and D isn't infallible. They have made mistakes all along the way. And we see constant examples on how regulation is done and then a few months later or few years later, they come back and say whoops, it's not just evolution of science, its incorrect science. And so I think the fear is that people are going to go out and put a lot of money onto the table and there is going to be a lot of capital*

put into evolving things. Then all of a sudden the rug gets pulled out from under people's feet and that is happening a lot in this evolution to the future kind of thing that's going on."

***Comment**: "We are talking about and I just want to remind folks that the original feasibility study on 10% reduction done by UC system concluded that it was challenging and vicious, but feasible. That study used no …. and it also included a 20% contribution for dieselization. So right now in California, they have taken away the feasibility and put huge penalties on bio fuels, reducing the effect of the bio fuels by over a half. And we still have kept the target the same."*

***Paul:** "My question relates to Nick's opening comments about low carbon fuel standard being a Brazilian ethanol bill and this new study basically saying if we continue pursuing ethanol then the Amazon rainforest destruction will rapidly increase. So my question, both for you, Ralph and John, since both of you guys have invested in Brazilian ethanol, which I think speaks to the direction that California regulation is taking us. My question is "Do you think that the low carbon fuel standard will have an impact on reducing deforestation in the Amazon?"*

***A**: "I need to understand your question."*

***Q**: "My question is will the low carbon fuel standard have an impact on reducing deforestation in the Amazon?"*

***Nick**: If you are driving this question from a perspective of the domestic ethanol industry?*

***Q**: "No, I'm asking the guys…"*

***Nick**: " I just want to understand where the question coming from? I just want to let you know that there are ways here that you can protect against that by committing to existing plantations, by committing to certifiable growth, old growth, and if you are a responsible company, whether you are doing bio diesel or ethanol you should be looking at that. And this is from the company that did not invest in Brazilian ethanol.*

***John/Shell**: "So also there is the enforcement of the energy bill that if it is a crop based product it has to be from existing agricultural land as of December 17, 2007 so any sugar cane based ethanol that comes from Brazil is going to have to be from land that was, in fact, in agriculture use on that date. So that is a limiting factor. More broadly, Shell is a supporter of sustainability principals, we have argued that consistently with EPA and also with CARB throughout the low carbon fuel standards. There should be the adoption of sustainability provisions. We are working with a number of different third party organizations that are addressing sustainability criteria for bio fuels. We consider that to be very important. We have also asked to be on CARB's work group on sustainability issues.*

***Nick**: "We have further criteria at Chevron and that is why we have taken a little longer, perhaps, to find our path on how we are going to go about doing this. Not only does the land need to be pre-committed to agriculture, for us to approach it as a concept, it has to be demonstrated to us that they are not taking something that is directly from the food supply and re-directing it to a fuel supply. That is the only way Chevron will go after something. It has to be a crop that doesn't have a food application or some demonstration that the sustainability will not be a problem. That is directly from our Chairman."*

***Mark:** "I have more of a comment and an observation than a question and it has to do with this: Oregon has a multi-faceted green house gas reduction approach and I think it is, in some ways, a misrepresentation of those other things whether it is either mass transit or reducing VMT or improving vehicle efficiencies, etc. So I think that one thing we want to focus on was that the low carbon fuel standard is specifically that. And I get mixed information and not a lot of understanding about the commitment or will of the industry. You identified that the RFS2 is very likely to accomplish LCFS goals in 10% greenhouse gas reductions and at the same time you discussed the EIA's reduction in cellulosic potential and the likelihood of not meeting RFS2 objectives is high. So I don't hear any commitment from industry in your discussions about well this will just cause shift in this LCFS market, it is small and will just cause a… "*

***Nick**: "A commitment to what?"*

***Mark:** "A commitment to a continuous greenhouse gas emissions from transportation fuels."*

***Nick:** "What you heard us say is that if the mix of science that goes into RFS is the right one in terms of CIs and the components it could potentially wind up delivering its stated goal. But the likelihood of that happening in the cellulosic field is low. Therefore, the perception at the national level is that we may have trouble meeting those objectives. I just wanted to clarify."*

***Mark:** "So my question is "So then what?"*

***Comment:** "The primary objective of RFS2 is not greenhouse gas reduction. It is innovation in fuels, and that is why the federal proposals encourage a set of ideas that ensure we get the reductions. That is the way it should be done, because that*

allows the lowest cost while you are also incentivizing the long term innovation to get these future reductions from the transportation sector."

Nick: *" I'm briefly taking my Chevron hat off to answer your questions. What we should do is once we bring in advanced bio fuels that are technologically feasible we should start talking about dieselization. That is what we should be talking about and that is why you heard the comments before. Let's start removing these barriers about where the benefits come from at the end of the day if they go into the pot we want them in the pot. "*

Comment*: "That is a very good observation and for us to consider whether or not we have one or two Baselines. A silo for diesel or not. And I think that is good information. Thank you."*

Nick*: " I think the combined impact of maximum achievable bio fuels could be hybrids and diesel in the market. I'm talking about the European modern technology not my Grandfather's vehicle, real diesels. Then we have something to talk about."*

Paul: *"We are the "baby oil guys" who buy from these guys and then sell it. But, part of the conversation that was getting me a little bit nervous is questioning the motives about what everyone is trying to do here. I think everybody is trying to get to the same place and we have a big question about the low carbon fuel standard and whether that's the right thing to do. We don't have a problem with getting information, in fact, we have been doing that with the State on a lot of different programs for years. Just this last round with ODOT were talking about electrification stations, charging stations at plaza places where people actually come in at in the I-5 corridor rather than trying to bilk stuff out. Everybody is trying to get to the same place. Our concern in the industry from our retail folks and your wholesale folks is when you make a judgment call in a room about what the best fuel is and then we somehow have to sell it. It doesn't work that way. Let the marketplace do it and get the information and then maybe you can maneuver a little bit. Classic example with electricity, we also represent the Peoples Utility Districts Associations, and one of our issues has always been about what qualifies as renewable fuel. Well a lot of people in that Association built out prior to 1995 that were way ahead of their time, and the legislature made a decision that we were ahead of our time and we get punished. So we don't get credit for that. That is what we are trying to avoid. We are trying to get all of the information in before anybody goes ahead and adopts a rule that we have to live with. That's what makes us nervous."*

Andy: *" I was just going to speak to the fuel-vehicle system, which I think is a good point. One of the issues we have is there are a lot of E85 vehicles out there right now that are not being fueled with E85 and that is because there is no way really to buy the E85 on a convenient basis. So it is one thing to get electric vehicles out there and it is another thing to get charging stations out there. It's one thing to get the E85 vehicles out there and another thing to get the E85 fuel out there. So I think the point is well taken about the fuel-vehicle system. On the other hand, I think the low carbon fuel standard is a good way to encourage other quality fuels to be made available and take advantage of some of those technologies that are out there. As we heard earlier, cellulosic ethanol is here, is technologically possible, is coming, and what they need is a guaranteed market so that they can get investors to build plants. So that is what a low carbon fuel standard and RFS does that as well. But, a low carbon fuel standard by creating a standard of especially low carbon intensity fuels like cellulosic ethanol can create that market certainly and get the investment made and by having that compliance schedule with most of the compliance happening you allow for time for that capacity and market to occur. So we have got some market barriers out there and by my thinking one of the big low carbon fuel does is help break down some of the market barriers that prevent some of the feasible technologies from getting utilized. I think that we will do our best in the economic analysis to see how it plays out with regard to our objectives. I do agree that we should just say how much fuel will be there and calculate how much reduction we can get. That does push the industry to produce more than what they would otherwise in terms of commercially available bio fuels and other types of low carbon fuels. So the way that we handle that in the low carbon fuel standards in Oregon is by tracking the supply with regard to our compliance schedule and I will get into that in future meetings. But we will, as we step down in the compliance schedule approach the 10% goal. If in any given year we do not have available supplies of low carbon fuels to meet that demand then we will defer the requirement. So that rather than saying this isn't achievable we are going to set a goal that we think is achievable from the five different compliance scenarios with ways that it could be achieved as implemented and if we can't achieve it we will defer. So I think that is, at least, one way that recognizing these things take a long time in moving and incentivize the market forward. One last thing, on the diesel, one standard versus two on the gasoline and diesel, we will be doing that, possibly at the May or in June meeting. There are a lot of important considerations to discuss along with the ones that have been mentioned today. But there are other considerations that will put in front of everyone about this issue."*

Q: *"How does low carbon fuel standards solve that in a way that RFS2 doesn't?"*

A: *"Well I would say that having all of those E85 vehicles out there and not limited to the 10-15% ethanol percentage and, if you can deliver E85 fuel, you will probably have a good shot at getting some pretty significant credits for meeting the low*

carbon fuel standards. So between the oils industry and Paul's industry you can be figuring a way to get E85 out there. It might turn out to be, given that the vehicles are there, a very cost effective way of meeting the standard, or maybe not. But I think there is one thing that could potentially help."

***Comment**: "I would just like to make a few comments on E85. Only 3% of vehicles on the road today are fuel flex vehicles. Most gasoline stations are owned by small businesses. It costs somewhere between $50,000-$200,000 to upgrade a gasoline station to have E85. So think of yourself as a businessman or a small business owner, does that make sense for you to invest that $50,000-$200,000 for a product that can only be used by 3% of the cars on the road. I think that is the reason that there are not a lot of them on I-5.. I think also from a customer standpoint if you look at a AAA fuel report that they do a break down every day of the average national price of gasoline and E85 ethanol with energy adjusted and I haven't checked it in a while but a week or so ago on an energy adjusted basis E85 was more expensive to the consumer. Because you do get somewhere between 25-30% less miles to the gallon when you use ethanol because it's got an oxygen molecule in it, which means that it is already combustible. One other thing around E85 is there are still a lot of issues. How many goes to the point of E15? E15 is not as simple as it sounds. EPA is considering the waiver. They may make a decision on it in June. They may only make a partial waiver on it for 2001 and newer vehicles, and that is not going to be the end of the story, that is actually going to be the beginning of the story. Because EPA's regulations on 50% are all written in terms of E10. ASTM doesn't have steps above that and that has got to change. Most states and even local jurisdictions have their own gasoline product quality specs. They are all written for E10. All of those things have to change before it would actually be legal to have anything above E10 and then, of course, on the infrastructure side, all of the tanks that are out there right now, and this holds true for the E85, they are not yet UL approved for above E10. So that's a big issue as well. There are a lot of practical issues around E 15 or E85."*

***Comment:** "That is exactly the point I was trying to make. Those are the market barriers out there that only a low carbon fuel standard can overcome. We have had flex fuel vehicles for a long time and we don't have the fuel out there. So we have to have an additional incentive to have the fuel out there. Now it may turn out that another fuel is less expensive so another approach may be used to comply with the low carbon fuel standard, but having a low carbon fuel standard is one of the ways to overcome the barriers that you are talking about."*

***Chair**: "This has been a good lively discussion and I want to thank the panel members and WSPA for coming here. As the chair, sometimes it's my job to say, "Next agenda item" and that's what I have to say. But, I do want to put in my two cents before we break. I am officially neutral and I will stay neutral. I'm neutral between Paul and Andy. I'm neutral on a number of these policy issues that came up, however, I am not neutral about trying to get the best possible product out of this committee. That is my role, here, to try to get this committee to do the best we can in terms of the job that we have in front of us. I see that job as making recommendations to the Environmental Quality Commission about rules, which were requested for consideration by the legislature. So a lot of what we have been talking about are alternatives to LCFS, concerns about the LCFS in its entirety or as it has been suggested by the legislature. I do not think that this committee is going to be particularly helpful in that regard. I said at the beginning that I will certainly let anybody talk who wants to talk, I'll keep our reports open in terms of points of view, but the discussion about the overall wisdom of policy issues for how to achieve greenhouse gas reduction are not the most effective way to get this committee to closure and recommendations to DEQ. So in terms of moving on I would like to extend an invitation to both WSPA and the industry representatives to talk about your experience in California and the ways in which that experience could make our product better. Assume for a moment, the hypothetical, that you don't want to assume that some kind of regulation is going to come out of Oregon what could be better or worse from your standpoint in how those regulations could be written. You know, from a seat at the table, how would you like things changed? And, if you don't have recommendations that's okay. Figure that we are going to go ahead and do something anyway. You know there is some concern about whatever that something is, are we going to have unintended consequences? It will be costly, etc. etc. but to the extent that you can provide any types of information in terms of whether it is a diesel or gasoline issue, or whether its implementation schedule or anything else, so that we have a full set of information with which to work."*

***Gina:** " Thank you for your recommendations. I will take this back and see if we can provide some input.*

Agenda Item E – State of Washington presentation

Bob Saunders of Washington Department of Ecology gave a presentation on the process underway in Washington to evaluate a possible state low carbon fuel standard, in response to a governor's executive order.

Questions and comments raised during and after the presentation included:

***Q**: "Quick question, our standard is 10% below 2010 standards so our baseline is % fixed. It sounds like your baseline is projected emissions for 2020 or whatever the year is?"*

***Bob**: "For the economics we are going to compare some projected baselines in some scenarios."*

***Q**: "This is today's picture. Do you have a slide or can you talk about five or ten years out or in 2020?*

***Bob:** "We haven't done that yet. We have talked about that. I think that is something the consultant is working on. In one of the slides, it talked about just what has happened in the last few years with Canadian imports going up and, I didn't see all of the WSPA presentation and maybe they showed you this, but if you see a slide for North Slope Oil from Alaska you will see it has already peaked and is going down. As the North Slope Oil is going down and it's going to get less and less, and then either Canadian or something else will come in. There is no question about that.*

***Q**: "I think, and correct me if I am wrong, but isn't the carbon intensity difference the assumption that the crude used in California is more energy intensive to extract."*

***Bob**: " Well that is part of it. The California base is the details of these analysis that came down from Washington, but it might have been differences in intensities or it might have been differences in the electricity used. I don't know. There is some thought that their numbers should be higher."*

***Q**: "What is RD2?" **Bob**: "That is renewable diesel. That is vegetable oil run through a refinery."*

***Q**: " I'm just wondering in the food processing waste, is there something special about that one?"*

***Bob**: "We didn't have it done in time for our last workshop."*

***Q**: " Any discussion of forest residual or bio mass cellulosic based diesel? I don't see that in any of your information."*

***Bob**: "We have cellulosic ethanol from wheat straw, cellulosic ethanol from trees, and cellulosic ethanol from forest residue."*

***Q**: "Nothing for diesel?"*

***Bob**: "No, I saw that the EPA has quite a bit on that. But we have nothing on diesel."*

***Q**: " You have those boxes for no indirect land use change. What is your proposal for including or not including indirect land use? "*

***Bob**: "I have that coming up next."*

***Q**: "Did you look at the indirect land use for petroleum. Has there been a conversation about whether or not to include it for bio-fuels and what about for diesel?"*

***Bob**: "We have had some discussion about that. We have chosen not to. But we have plans to look at that and see. It may not come out as a qualitative factor. Sometimes you can't always put numbers on things, but again the stage that we are at we taking at look at the recommendation of whether or not to do this program, so in the qualitative assessment we think there is an issue there and it is large enough to be concerned about, but I have no idea what the number is.*

***Q**; "One of the challenges that you are going to have, and that we are going to have is that if you want to do a balanced approach and look the indirect effects of petroleum then and in depth. We don't want that to be an obstacle to having the right kind of rule. In that respect I was wondering if you have thoughts about pushing out the decision of the indirect land use either later on the compliance schedule? I'm just thinking if there is a way to allow those resources that are going to be applied by EPA, perhaps California, the national Academy of Science and other scientific of bodies that can perhaps be in a position to do a more comprehensive job to reach a more public consensus. In conclusion, as you have indicated, it is all about indirect land use and that is where the criticism of picking winners comes from and is the most controversial.*

***Bob**: "We would love it if deeper pockets could take on that question."*

***Q**: "I have a follow up question on the Brazilian sugar cane issue without saying one is right or wrong that difference between EPA and California is so big there must be some basic difference in terms of assumptions or you know input that would drive that order of magnitude kind of difference. I would just like to understand it."*

***Bob**: "What the main assumption difference is?"*

***Q:** "Or is it just an aggregation of many small ones to add up to a big one or what?"*

***Bob**: "I don't really know and maybe John has a better answer."*

***John**: "There are some assumptions in there regarding what the bio refinery emissions of greenhouse gas would be in 2022, based on the EPA's analysis. They say in 2022 emissions are going to be much better than they are today. In addition to that, there are some additional differences in regarding the yields that they project for 2022 and some additional differences of the coal products that they assume will be used for 2022. California analysis is for what it is today. The EPA's analysis is what will happen in 2022 and that is a preliminary overview about the difference. The numbers are a significant difference. There is no question about that."*

***Comment**: "Yeah, it is very difficult to compare the analysis. There are a lot of apples and oranges in these two different analysis. EPA used different models. They also used these other agricultural models and, as John points out they were looking at 2022."*

***John**: "Yeah, they also created separate models for the sugar cane ethanol analysis, which theoretically took into an account some changes in land use and other factors, but specifically looks at the Brazil situation. So that is a significant difference between them, although the model is the same, but the direct emissions they have is much, much lower in the EPA's analysis."*

***Comment**: "I have a feeling we are going to touch on this again as a preliminary thing, but it seems like using 2022 numbers is very difficult to justify given that we are trying to find technology to get there and if we don't use the baseline numbers it's hard to see how we are going to get the technology so that Brazil's refineries, or whatever, are using the technology that has an impact of 4 instead of 6. So that is my one thought on that is we need to use numbers for today and not for 2022."*

***Bob**: "Yeah, it's a tough choice. Obviously, this is a ten year program and we will look at the process in the immediate stages as well."*

***Comment**: It seems like the biggest problem is in the baseline. If the baseline is hovering around 93-96 and then all of a sudden you put in indirect land use for petroleum then the baseline is going to go way up, or I assume that it will go way up, and then 10% maybe isn't really your goal, then you are going to say 30% or something like that if you are trying to get to a hard absolute amount of green house gas emission reductions, because the percentage isn't as important as the absolute. So it seems like that is the big thing to take on."*

***Carrie**: "I think that is a great point to make. As you pointed out, Alaska production is going down and if the alternative then is to increase Tar Sands production, which has a higher CI than our current baseline now. The benefits of low carbon fuels are greater. The benefits are greater from low carbon fuel standards, compared to that business as usual scenario."*

***John**: The California mandate requires us to look at 2006 as a baseline and that what we looked at establishing the baseline for crude as it is processed by the California refineries. So we looked at the California crude markets to estimate what the baseline is going to be. There is no question that the baseline is going to be changing over time and we are in the process of structuring the process and that's how change is going to be incorporated in the regulation. There are two ways of doing that, there is language in the regulation that allows us to do that now. The second approach is for us to revisit that every three or four years and look at and adjust the baseline. But the fundamental thinking seems to be our baseline is 2006. Our target models for carbon intensity are based on the 2006 baseline and the reductions are based on a 2006 baseline. So if their baseline moves upwards it fundamentally means that the refiners have to reduce further the carbon intensity values because probably they are not going to change the target line they are going to change the baseline. So there are a lot of complex issues. But there is basically a way to account for any changes that are made."*

***Q**: " Quick question for Andy. I just don't remember this. Is Oregon working at a fixed baseline or is Oregon looking at what is essentially to be an annually adjusted baseline to which the percentages apply?"*

***Andy**: "I don't think that that has been decided yet. It has not been decided yet. It is something that this committee will discuss. And mathematically, there are a couple of different ways to do it, but what John is saying is that in California they calculate the reductions needed or the target greenhouse gas intensity table based on the fixed baseline of 2006 and then those numbers will stay the same and if they adjust the baseline along the way that means that Petroleum fuel distributors will have to blend even more bio fuels to meet them, because the baseline is going up. We could do it a different way. Mathematically you want to get to the same reductions to get 10% below our baseline year. So whichever way makes it administratively more efficient I think we should consider."*

***Q**: "I thought we had talked about this at the last meeting. I think we talked about the length of the baseline and that the statute says 10% below 2010 levels. Then we had a whole discussion of how do we figure out what 2010 is, because we have*

numbers for 2007, I think it was, and we are getting 2008 numbers, but I thought the statute was fairly clear that 2010 is the baseline."

***A**: "It is pretty clear. There is a little bit of flexibility to make some adjustments to our years, but if the basic concept is 10% below 2020, then how do you measure that, I think is what Kyle is asking. If you are in the year 2005 and you have a certain amount of gasoline and you have to blend a certain amount of bio fuels to achieve whatever number is on the table then what is your gasoline that year? That's the question. But calculating your reduction we need to achieve a 10% goal below a 2010 level in our rule."*

***Q**: " I think the confusion is we are saying baseline when we really mean gasoline CI's not baseline."**A**: " Right."*

***Bob**: "This actually echoes what Gina said earlier and that was that you have a hierarchy of corn ethanol versus sugar cane ethanol and cellulosic ethanol and then electricity fits in there so it's the same numbers. We are drafting specific scenarios to get analyzed and then crank through the economics. These are draft ideas for a draft proposal. So this could change dramatically over the coming weeks. British Columbia is trying that that. We are at least contemplating looking at it, but we haven't made a decision yet. I am not quite sure how it plays out. Other things we are thinking about are, through an economic perspective, it might be helpful to look at what if as much of the ethanol as is being processed in Washington as possible or what if Canola being grown in Washington into bio diesel. So one possible principle might be to take a look at what the maximum in state benefit would be. That is one thing to consider and then number two is the opposite based on the minimum in state ethanol with some manufactured in the Midwest and the ethanol would come in train cargos and then that would probably have more Brazilian ethanol in it perhaps as well. The third thing is the idea of looking at advanced ethanol, cellulosic ethanol. What if that comes on more strongly than it has in the last three or four years, then we might anticipate larger volumes of advanced ethanol than one might otherwise think. So that is one idea. Certainly there is movement towards growing Canola for jet fuel and possibly using it for diesel as well. Then you've got the waste diesel streams, which looks pretty good in terms of carbon intensity, but whether or not they are big enough to vary realistically. I'm not sure. We have two companies in Washington State that make bio diesel from waste oil. Anyway those are just some of the things that we are thinking about."*

***Q**: "You mentioned British Columbia. Do you know what they did visa vi indirect impacts?"*

***Bob**: They decided to not consider indirect land use impact on the basis of all of the uncertainties in the science, and they are sort of deferring that. They acknowledge it as an important issue."*

***Q**: "And that is an adopted program?"*

***Bob**: " I don't think it is in regulation yet, but they have a set of principles and so they have been up and down the road on it.*

***Q**: "But they did go with one baseline and it is going to drive them towards a diesel product, probably in the short run?"*

***Bob**: Yeah I think what happens is that …the way we are thinking about it is that under one pool, again if you compare it to a baseline with a certain mix of gasoline and diesel in the baseline and then under the one pool approach if we get proportionately more diesel in the future then you get the benefit from diesels. But I think right now the EER, the efficiencies you know, the increase in efficiency in diesel relative to gasoline is, I think, .2, so that is an EER of 1.2 and that is quite a bit. That is 20%. That is quite a bit. And that only shows up if you combine them into one pool. If you keep them in separate silos then you are comparing diesel to diesel then you don't have that 1.2% factor.*

***Q**: "On that point, and I don't know if I can explain and I will let Sue help me, does that dilute the 10%. In other words, if you are going to get 10% separately from gasoline and diesel you go a certain distance, but if you are going to allow the EER to account for some of your reduction are you getting less than 10% net as to compared to your baseline?"*

***Bob**: " That is one of the questions that I am still spinning my wheels about on just exactly how it works, but the person who is looking at those strongly in our office has said that he thinks that because you compare the one pool to the baseline that it is only if you can get a proportionate increase in the percentage of diesel fuel. So you get more light duty diesels into the fuel. So it is only through the increase in diesels where you would see that, not the 40% or the 35% of the fuel that is already diesel.*

***Q**: " Bob, can you tell me in terms of your minimum and maximum EV's do you have any rough idea of what kind of market penetration you are guessing as to minimum and maximum?"*

***Bob**: No I'm not entirely sure. We are possibly only looking a minimum and maximum number. So, one way to approach it would to be to say that Washington will not adopt this according to California standards, but we can figure that out. This is what we did get and that could be a minimum number. The numbers in Washington could be in the hundreds of thousands."*

***Q**: I am more curious about percentages. As Sue said this morning, she picked a number for possible compliance scenarios, picked a number that east coast states have come up with. We are going to need to look at all kinds of different numbers and I was just wondering what Washington had."*

***Bob**: "Yeah, 3.2 million in these states seem like a big number."*

***Q**; "Quick count, which does not include the need to switch vehicle types or engine types. You had an EVR of 1.2. You would have to bump the reduction from 10% to 17% to have the same outcome, roughly? I mean there is still some assumptions there."*

***John**: " Yeah the assumptions are based on the penetration of diesel technology. It's the penetration of the new diesel."*

***Q**: "So assuming that there is complete perfect and quick penetration for switch over to diesel it would be a 17% reduction, then?*

***John**: "I don't know exactly the numbers."*

***Bob**: The question of EV penetration, you have to address that to baseline and the scenario. The EIA and the Energy Outlook has a very small number of diesels being sold in 2020, which is 2%. And I have been collecting information and that is helping with projection of sales and it is very interesting. If I take out the high and the low it comes out, for 2020, to around the 6-7% range. So I think there is a really big discrepancy between what the consulting world is projecting and the energy administration is projecting.*

Agenda Item F – Regulated and Opt-In Parties

Sue Langston of DEQ presented proposals for the parties that would be held responsible for complying with the LCFS, including those entities providing low carbon fuels which would have the option of participating in order to sell credits. The committee heard background information about regulated and opt-in parties at previous meetings.

Points raised during and after the presentation included:

***Q**: " In terms of the delivery resources, it is opt in rather than regulated here in Oregon, because is it still anticipated to be very small in volume (CNG?)? And also the carbon intensity is so low?" **Sue**: "Yes, those two factors."*

***Q**: I am actually, my question was going that way, but I am intrigued by Harris's question and that is…So two components, one is the proportion of natural gas for transportation is that small?*

***Sue**: It is small right now, but it could be increased.*

***Q**: "But that is why it's opt in? Yes…but the main reason it is opt in is that it already meets the threshold for any North American gas source upon which our region would rely?" **Sue**: "Right."*

***Q**: "So it's not too early to bring this up, because you had the regulated piece there. Other sources of natural gas, which presumably are liquefied, imported liquefied natural gas?" **Sue**: "Yes."*

***Q**: "So that would be gas from Trinidad or Tobago or Indonesia or Australia, etc.?" **Sue**: "Correct."*

***Q**: "Or anywhere else. I have really gone through with a fine tooth comb, my members have stated we can't understand how you can differentiate those molecules?"*

***Sue**: "Certainly a natural gas company would be able to say what percent they got from that kind of source."*

***Q**: "Which goes back to Harris' original point, which is that the proportion is already small. We are talking about maybe 10% of the entire mix would be potentially part of the fuel mix. And we are talking about maybe 1% of that 10% or 1% of that proportion is actually being used for vehicle purposes. Are we creating the potential here for a lot of infrastructure around something that is not going to make any difference or very little difference?"*

***Sue**: "But if we don't address it now it is not really treating other fuels fairly."*

***Q**: Is there a way to create a threshold, at which the fuel mix, the natural gas mix includes X component of LNG and then at that time that becomes a regulated entity. Because, you know, number one, I think everybody around this table feels like there are three active LNG developments. People are still making money on them to get them going. There is a lot of skepticism about whether any of them are going to occur. And, number two, even if they do occur they are projected to operate at 40% or less utilization factor. So you are talking about a billion cubic feet a day facility, that at most could supply the whole region with 50% if it is operating at 100% capacity every day of the year. That is about 50% of the average daily consumption of the region, which is about 2 BCF a day. So, if you mix the life cycle carbon emission intensity of LNG with the life cycle carbon intensity of North America Natural gas, at a 50/50 ratio, aren't we still probably below that?"*

***Sue**: "I don't know"*

***Bart**: " Sounds like you know a lot about the plausible scenarios."*

***A**: "Well I mean plausible is kind of the key word there, Bart."*

***Comment**; "There are some practical implementation issues there. Opt in versus regulated. If the regulated entity is always going to be a fuel dispenser, then the fuel dispenser might be a fleet operator. How is he going to know if he is opting in or if he is already regulated, because the portion of the natural gas that he gets from the utility will not go to any of the dispenser, so they are not regulated, but they are the ones that are coordinating the RNG. So is anybody going to do natural gas just by virtue of the fact that LNG makes its way into the natural gas distribution system that just happens to be a customer. Because if you regulate the fuel dispenser you won't ever have an opt in. If you want to sell natural gas to transportation because there is LNG in the mix already, aren't you then already automatically regulating it?"*

***Q**: "Yeah at any level."*

***Comment**: "Because, I don't know how you can differentiate that if your point of regulation that the opt in regulation system is the person who owns the dispensing equipment. Because they don't have control…they don't have the management control. They are not making the decisions to import the LNG for their fleet operation. So that is why I see the difficulty here in differentiating natural gas, as to whether you are or not. The only way you have a regulated source is if, and I'm just going to throw this out there, Northwest Natural Gas is contracting or bringing imported LNG and NW Natural also operates a bunch of filling stations."*

***Sue**: "Right."*

***Comment**: "That would be one hypothetical. Let's say they don't, because I don't believe they do. Most of them are title partnerships and the partner actually has title to the equipment. What happens with the customer who is receiving that? That is where I see the challenge of how you laid this out with the fuel dispensing equipment. I actually like that and I feel that is pretty close to what they will recommend on the electricity side. What is tripping me up is this differentiating between opt in and regulated."*

***Sue**: " I guess you are right, because one way to deal with that is to make it opt in."*

***Comment**: "I can see our fuel dispenser guy could call up his fuel provider and say "What is your mix with North American and what is your mix with LNG?", and then maybe there is a different CI. Then that assumes a mix of those two. And so he is not given as much credit, because there is a greater percentage of imported LNG as part of that. It is almost an analogy of how electricity might work, at that point. What if there is a really lousy hydro year and higher carbon one year, and then the underlying mix is not as low carbon as it has been in the past."*

***Sue**: "Right. I like that proposal."*

***Andy**: " I just want to join the discussion here. So would CNG that was made 100% from imported LNG it be over the carbon intensity value?"*

***Sue**: "I don't know"*

***John**: "It is possible that it would be very close."*

***Comment**: So to be protected you might want to say that CNG that was not from North American sources that was not blended in with the pipeline, but that was sold directly as transportation fuel. That is likely a very small market, but that particular case would be regulated if it sold as transportation fuel. And then otherwise, if it is blended in the pipeline then I think Kyle is going down the right path. That when the person who owns the fuel dispensing equipment chooses to opt in they are going to get a carbon intensity value that represents the blend."*

***Sue**: "So are there any objections then to whoever owns the fuel dispensing equipment being the opt in entity?"*

***Comment**: "The only thing that you are going to have to deal with is the feeling that the public has that filling stations are jointly owned. So there might be a question of the joint owners as to who gets to decide who they are opting in. That is the little wrinkle there. There might not be one person."*

***Q**: "How often does the fuel exchange?"*

***Sue**: "The ones that I called didn't have a joint ownership issue. They might have a joint use agreement and then that goes to the transfer and that owner get to decides who gets the credit directly."*

***Comment**: "We should decide on this quick, because all eight of them are here."*

***Q**: How frequent does a blend change? You know, an electric utility has kind of a little bit more stable sense of its average blend, but if we are saying that LNG is the strategy to fill capacity, then?"*

***A**: "It depends on how many terminals."*

***Comment**: "I mean really the analogy of electric terminals, like the one Kyle mentioned, is very good. If the hydro year is low then they are going to burn more coal and more natural gas. So, if LNG is cheaper than domestically available natural gas, then the mix is going to change."*

***Q**: "But, will it change day by day, week by week or what?"*

***Comment**; "Well it changes year by year, but not really daily. Well, I mean effectively it changes day by day, because..(?) of the pipelines occur day by day and so the mix changes quite frequently, but the accounting that it makes doesn't."*

***Q**: "It can be done on an average basis." **A**: " Sure."*

***Q**: "Did we want to follow up with the point about if the percentages of imported LNG and if the mix goes above some point would that automatically make pipeline fuel regulated as opposed to opt in to the extent that someone is selling it as transportation fuel. I guess there is some point you would have to wonder if it was going to be high enough to be worried about. Or whether the blend is always going to be lower than the standard for gasoline or diesel and you just deal differently with opt in?"*

***Comment**: "Yeah. Practically speaking, if an LNG terminal is built and operated at the utilization factors that we are talking about, we will never breach that low carbon fuel standard."*

***Comment:** "Unless we run out of…, which is less likely today than it was two years ago and is getting less likely every day."*

***Q**: "I have a question. I wondered, as you are accounting for these, and I see that there is some difference between Kyle and Dan on this. Would it influence the decision making if you had to decide that the fuel mix is dependent upon the contracts that you have in place of dispatching the flow of natural gas. So in assigning this, there is a certain amount of LNG to be used irrespective of the cost. You will have a certain amount of contract for a certain amount of time period and wouldn't that to some degree influence or determine the quantity of the carbon content, but more importantly, what fueling makes it regulated or not. I mean what in the ownership or the actual contract comes to be another factor in decision making that goes back to the ownership?"*

***Q**: "If I take another analogy of water quality regulation; for them to determine compliance they will look at contract. They had to look at contracts in terms of the ownership so in answer to your question of monthly or daily, if a contract dispenses a certain amount of LNG could that be a basis in determining… (?)*

***A**: "Yes, those are typically contracts like that are typically take or paid and what happens is those volumes if they are not actually utilized by the utility then they are sold and optimized elsewhere. So what do you do with that? I mean you are actually not consuming it so should you be responsible for it because you sold it to some other consumer of natural gas."*

***Comment**: "You either have to go on the producer or consumer on that."*

***Comment**: "I'm sensitive about our time and the fact that this is less than ½ a percent of the market and I think we could decide this …*

***Sue**: "So we agree that there are no objections to this? Then I just want to reiterate Andy's proposal to make sure there is no objections to that. All CNG that comes out of a pipeline can opt it, any CNG that comes from LNG is not blender into the pipeline is regulated."*

***Comment**: "Yeah, that is where I have an issue. Because I don't know how you do that."*

***Comment**: "We could back up to that place down in Newport."*

***Comment**: "Well that's not the kind of LNG she is talking about. I mean that is pipeline originated North American ONG."*

***Sue**: "So any LNG that goes into a pipeline is opted in?"*

***Comment**: "No. Because Newport LNG is a…(?)… facility that is liquefied off the pipeline that comes from North American natural gas sources. So what you are really getting at here is imported LNG."*

***Sue**: "That's what I meant. So is there any objection to that?"*

***Comment**: "If I can jump in here. I heard Mark, loud and clear in terms of how important this issue is and, as far as all the other issues, and it sounds to me like we have three possible proposals and none of them have any kind of permits or any kind of building. We are probably looking at, what is the fastest that they could be online? Several years from now?"*

***Q**: "An LNG terminal? Yes, several years from now."*

***Comment**: "Then make it all locked in for now."*

***Comment**: "Yeah. I think that I would be comfortable with that approach and, as imported LNG becomes viable, if it becomes viable, we can revisit the issue at that time and then figure it out."*

***Q**: " So this is what we have just been talking about?" **A**: " No".*

***A**: "This is about Coos Bay, the coal gas levels in Coos Bay that they might gasify or liquefy."*

***Sue**: "My I just clarify something. This is LNG used in a vehicle. Not CNG. So it's the end use of that fuel."*

***Comment**: " You do recognize that you can take CNG at a fleet operation right and liquefy it? And then put in on transit buses." **Sue**: "Yes."*

***Q**: "So why would it not be opt in if you are talking about LNG of the vehicle?"*

***Sue**: "Because LNG sometimes has an end use fuel that sometimes has a higher carbon intensity than the 2010 fuel does or could."*

***Q**: "If you've got liquefy?" **Sue**: "Right".*

***Comment**: "Seriously in the interest of moving forward. There is just a lot in here that…."*

***Comment**: "Actually the point is that we were trying to bring closure to an issue that we had at the last meeting or two meetings ago, so it is a small point and we don't want to try to spend a lot of time on it, but we do need to make a decision. So that we can move onto many, many more issues.*

***Q**: "I will let this alone after I ask this question. There are a number of transit districts down in southern California that use LNG?" Sue: Right.*

***Q**: "So what you are saying is that they are all regulated by low carbon fuel standards because CARB has determined that LNG has a higher carbon intensity than diesel? How is it that they are regulated from the beginning?"*

***Comment:** "I think it is because of the energy due to compression. It has to be included in the use of that fuel.*

***Comment**: "Even taken into account, that makes it a higher carbon intensity than…?"*

***John**: " It is exactly how much energy. So in some cases it could be much better than advanced fuels. And some places may be close to these in 2020 hybrid."*

***Comment**: "I would use the same conclusion that Mark laid out. You ought to do this as a case by case. We can look at it when we actually have a situation. I'm hearing what John's saying. Not in every situation will LNG have a higher carbon intensity than diesel?"*

***Sue**: "And we won't know that until they actually do the analysis of their operation. And that is the thing. If it is opt in, we are assuming that it is lower than the standard. They can opt in when they choose. Regularly it just means, if it is lower than the standard there is no impact. They just have to show us that they are lower than the standard. You see what I mean. So either way, they are going to have to do the work. And so regulating just means that they are required to record it instead of us chasing after them to try and track them down and get them to do the work."*

***Comment**: "I think there is a fundamental policy question here and that is, do you want to introduce a barrier to the adoption of LNG transit vehicles, for instance. If you want to introduce a barrier to that you will make them regulate it. That is a barrier. It is a hurdle that must be overcome, and maybe it's easy and maybe it's not, but it is a hurdle. So that is the question that you have to ask yourself whether it is regulated or whether it is opt in. Opt in and maybe they get to come in anyway, but regulated you are creating one more layer of difficulty for them in this process, which could be beneficial."*

***John**: "We do have a very limited number of facilities, a very small number of facilities, and these facilities could be very easy to find out what the carbon intensity is going to be for that specific facility, but then what is the nature of CNG's coming from some other factors. So we already have the low carbon fuel standard. That will tell you if they are much better and what the comparison level is."*

***Q**: "So are they opt-in there in California?"*

***Comment**: "Yeah, the question is if they are opt in then the agency does the evaluation, right? If they are regulated they have to do the evaluation and that is where the barrier comes in. It's a resource."*

***Comment**: " Although, I'm not a huge fan of considering air toxic systems and other environmental issues in the context of low carbon fuel standard for Oregon, let's say, because of how we are structured in our statute. This might be an opportunity to think about that in Oregon to consider whether or not the air quality standards and you have new MACT standards coming through and they may have great difficulty in that. It is a wash on whether we have an opt in system versus a regulated to begin with. This is a critical tool for southern Oregon to able to meet their MACT standards I would suggest that maybe we leave that off in order to let them deal with air quality. But I think that is a conversation that we need to have with those folks in dealing with those regulations."*

***Comment**: "Again, the initial implementation of this program that LNG is going to be opt in as well. There is a limited number of them. We could revise the program later if there is the problem. If this is small potatoes, just make them an opt in and move on."*

***Comment**: "This is like 2016."*

***Sue**: "Okay, great."*

***Q**: "Just from an implementation standpoint I can tell you some of the program that run on bio gas LNG mix with traditional LNG. So that it is likely that dispensing equipment, there will probably be a combination of both at period of time during the year when they are not gearing up. If they are not selling LNG they have to augment it with something else. I don't know how many fleets are actually of pure play or one or the other."*

***Sue**: "Any objections to any of that?"*

***Q**: "This would be like if there were a series of stations." **Sue**: " Yes, exactly."*

***Sue**: "So, great."*

***Q**: " A while ago you had bio fuels you had the word feedstock. Did you mean blend stock?" **Sue**: " Blend stock, yeah. Sorry about that."*

***Andy**: "How does it work for diesel?"*

***Sue**: "That is the difficult part. I think that if whoever sells gasoline also sells diesel they would have to be the regulated party. The problem is that some fuel sellers are fuel users. We have been told by ODOT that there is probably little to no sellers actually just dealing in diesel and not gasoline.*

***Comment**: "Most of the dealers of gasoline also distribute diesel and ethanol, so they would probably be the ones in that scenario."*

***Q**: "But if you had a fuel seller or user that did not also sell gasoline they would be the regulated party."*

***Sue**: "We would have to find some way to capture that.*

***Q:** "Just so I understand this. On a slide you had a couple of slides ago, you had 155 gasoline licensed dealers. So you have 155 entities in there, and I would guess that most of them, maybe all, sell diesel also. So that is a subset of the 750 that sell diesel."*

***Sue**: " No. these are different people."*

***Q**; "But most of the fuel that the 750 use came from those 155 but not all of them." **A**: " Almost all of them."*

***Comment**: "This may surprise you but we don't object to that, at… level."*

***Q**: "The 155?" **A**: "Right"*

***Q**: "Cause the 155 is carrying what percentage of diesel?" **A**: " 99.9%"*

***Comment**: "Basically, everything out there. You are going to cover pretty much everything out there."*

***Comment**: "So what we are saying is those entities would be the regulated entities. That's what we are saying, for both the gasoline and the diesel."*

***Comment**: "You would want to reword the regulation to say they are licensed and they are also distributing diesel then they would be regulated."*

***Comment**: "They all have the number that you are looking for."*

***Sue**: "What did you say Paul?"*

***Paul**: "They have the number of gallons of diesel?" **Sue**: "Yeah."*

***Michael**: " Just so I understand. The fleets would have their own fuel tax dollars, aren't responsible for gas or diesel?"*

***Comment**: "They would be responsible for diesel under certain circumstances."*

***Comment**: "I know that I don't. In fact, anybody now would not want to be directed by the…."*

***Sam**: "I'm sorry if I am misunderstanding but …the tax on all taxable fuel use, it doesn't go in an employee trust fund or something?"*

***Comment**: "We would actually like a vote on how the tax actually gets used on the fuel that is used and distributed throughout the state."*

***Comment**: " So you are saying that the 155 entities are reporting to you information about fuels, both are not taxed and are taxed.*

***Comment**: "In some cases, yes."*

***John**: "I have a question. How are you going to be able to deal with most of the dealers that are going to do the reporting to you. How are you going to be able to determine where the fuel is coming from? And what carbon intensity is going to be associated if the dealer is the same, because what we need to have for the fuel is so you have to have report on carbon intensity. I don't know exactly where the dealer fits into the chain of things. Will the dealer have the information on who imported the product and where the product is coming from so therefore you are going to be able to know the carbon intensity of the product that the dealer is selling.?*

***Sue**: "So I think the question is, how would one of these fuel dealers track where the fuel came from and what carbon intensity is."*

***Comment**: " Generally, they are coming from the terminal."*

***John**: "And the operators of the terminal get their fuel from imports. Or they are importers? So the origin of all of that fuel is from imports."*

***Comment**: " But, I don't think you can determine the difference from fuel that came from a terminal from Saudi Arabia or from fuel that came from California. Can you tell the difference?"*

***John**: " It is not that much an issue with the gasoline itself, because the gasoline will have lower carbon intensity. The issue is of the blend stock, which is going to be the quantity and the type of ethanol for that matter. And I do not know if I can understand if the dealer would know that information. But if the product has gasoline, but the gasoline already has lower carbon intensity for every gasoline that was sold. Diesel has the same carbon intensity as part of the mix that they are going to sell or have the carbon intensity associated with the bio fuel.*

So along those lines, based on other conversations on this inquiry, they are going to know if they have ethanol sold separately. They will be reporting the total gallons of diesel to gallons of gasoline. And you are asking will they know the carbon intensity of the ethanol because it depends on how the ethanol is made."

***Comment**: "So they will have that information and you are going to be asking if they know the carbon intensity of the ethanol because of how the ethanol is made. So from California it would be the first producer of the ethanol that would be the regulated entity or importer but not necessarily the dealer who is distributing it. So that might be a question to think about. Maybe the scheme works for the gasoline and diesel, but not necessarily for the ethanol."*

***Comment**: If you had a high super diesel blend stock. It has to come in and get mixed somewhere and somebody has to have a record of those two parts coming in and getting blended to get carbon intensity numbers of the terminal. So that is really the piece of the imports in production. So it needs to be regulated there before the terminal. Because the terminal is the blending area, right. So you are going to have that large scale then it's got to be up stream at the terminal."*

***Comment**: "So that is the question. Will they know at the dealer level. Do you know Paul? If they are selling ethanol or…"*

***Comment**: "I am sure that none of my people know whether or not the ethanol they are selling came from Brazil or Idaho. Very few."*

***Comment**: "Some will know, because there is already a few below of the value.*

***Comment**: "Yeah, some of them buy the value, but most of them don't know where the ethanol comes from."*

***Comment**: "You would have to go back to the …. or the producers of the ethanol. Because there would be a very different carbon intensity value depending upon what type of ethanol it is."*

***Comment**: "The terminal will know what it bought.*

***Q**: " But, what if it is not blended at the terminal?"*

***Q**: "How do you prove that if you are a terminal? If I say I bought it from these folks and it was made clean. Where is the proof? Where is the proof for that carbon intensity?"*

***Comment**: "But that is a slightly different issue. Because the proof will go along with the credits and values."*

***Q**: "If you are looking for our recommendations? From our point of view we like Option A.*

***Sue**: "Because it is more functional and flexible?"*

***Comment**: "I think you are dealing with fewer parties there. It is where the action is happening."*

***Sue**: " Option A is more flexible for the fuel pumps in Oregon."*

***John**: " We have a way to identify the source of the product and the carbon intensity and maybe that is the best way to do that. I don't know exactly how the system works, but for the question we have to have the carbon intensity of the product that is blended, specifically the ethanol. It is not that much of a concern about the sources because what we are going to do in the California program. We are going to try to register all of the facilities that have bio fuels. We have established the program and all the facilities are registered. And for each facility that is registered we have identified the carbon intensity of the product and have a master release(?) that is going to be associated with the program. And the master release)?) for each facility will identify the products carbon intensity. So if somebody buys from that facility in Idaho for example and you can look at the table and see the carbon intensity of that product."*

***Comment**: "Annually? Because of constant improvements and changes?"*

***John**: "We are going to try to identify and register all facilities. That is a voluntary program, but we expect that most of the facilities will subscribe to that."*

***Robert**: " On the petroleum side, we are going to be using the notice that an average of all the feed stocks and assuming that that is what is coming in, because we don't know. And at the time that we do know it is because we can know or we do know. I guess that is my question. Do you understand what I am saying? Do we know the percentage from Africa, Canadian or Oil Sands? Therefore we are using a blended average."*

***John**: "For each one of the products, there is going to be a specific carbon intensity value associated with that, according to the rules of the committee."*

***Comment**: "And we are not going to average the final fuels because it is such a new product that is going to swing back and forth all the time. We are treating them very differently."*

***John**: "Yes it is much different."*

***Q**: "But, are they stable over time? Of the various fuel origins, you can have a carbon intensity number, but are they stable over time or do they change?"*

***Q**: "Are you talking about the carbon intensities of bio fuel?" **A**: " No."*

***Comment**: " Gasoline is based on the refineries process and are under different processes, based on the crude product that you have. So it will change over time but this is under discussion. Whether or not the baseline is the same is a different question."*

***Comment**: "Sue, let me see if I can summarize this Option A versus Option B better. It goes further upstream, right? Your original proposal doesn't necessarily track the taxing and ODO information and may require the regulator to do something additional that they are not doing right now. Option B, which would have looked more to the 155, are more in line with ODOT taxing and has an ease of use and ease of implementation going for it, but it sounds like it has some difficulties in terms of the bio fuels, or at least a piece of it. How that information be pulled together, recorded and all of that, does that seem fair?"*

***Sue**: "And its flexible.*

***Comment**: "B being less flexible than A?" **Sue**: "Yes."*

***Comment**: "One other consideration is that in Option A they don't necessarily know if that fuel is being sold into Oregon or into Washington or somewhere else. Versus in Option B, I think they do know exactly that is sold in Oregon. Right?"*

***Sue**: "It is my understanding that at the bulk level the compliance obligation was just transferred. When it was sold out of state that is, when they could take it out of their mix. Does that make sense?"*

***Comment**: "Yeah. I just want to make sure that if we went with Option A that it is something that could be in those records if we could get those records."*

***Comment**: "It is a heck of a lot of more difficult, I believe. In B, it's based on what is sold in Oregon. And A is not. Because something ends up in an Oregon bulk plant or is taken by an Oregon truck doesn't necessarily mean that it is going to be sold in Oregon. That person could be making a route through the stations in Oregon and in Washington and be all over the place. It is a much greater burden to do the record keeping on that. The reason why B for reporting purposes is much nicer is it is easy. If there is any way that we can get whatever numbers that are available on feed blend stock then that is probably the better way to go, with less burden to industry."*

***Comment**: "So maybe there are two options to explore. One would be to use Option B for gasoline and diesel but not for the bio fuels. I don't know if that is easy to separate out. But they could go through an Option A approach and the other option would be what Paul said. Whether or not you could go with Option B for everything, but that the terminals would have to get the information on the carbon intensity somehow."*

***Comment**: "The terminals would have to report the carbon intensity content into the dispensed blended fuels."*

***Comment**: "But it is not just all, and correct me if I am wrong Frank, blending does not just occur at the terminal level. It occurs at other places also. So it is not just at the terminal."*

***Q**: "Is that how it works for the credit?*

***Comment**: "They don't put it in their tanks if they don't know what it is."*

***Q**: "Credit-deficit calculation. Did Sue show this earlier? They don't report blended. They record them separately so you can say how much gasoline you sold. And then how many deficits do you have from that. And then how much bio fuels did you buy and sell and how many credits do you have from that. You can handle them separately if needed."*

***Comment**: "One of the points I wanted to raise is one of the reasons we wanted flexibility in the system is you have to keep in mind that this has to be done in cooperation. These should marry to each other in my opinion. Secondly, we want flexibility, because one of the advantages that flexibility gives us is that an Oregon producer can create a relationship with a user allowing an increase in the level of the bio fuel use. And you want those two parties to be able to trade directly through each other, so there is a potential financial exchange relationship there, an economic relationship there that incentivizes that. So you want that flexibility.*

***Q**: "Yeah, I was just wondering if it was ODOT's intent to tax the credit or just tax the fuel?"*

***A**: "We have no statutory....."*

***Q**: "One other question. I know there has been a lot of work by OIPP on the erosion in the gas tax and moving away from the gas tax as a source of the financial base for the highways, but is there an estimate of when we would be 50% weaned off the gas tax or 100% off the gas tax. Is there any kind of understanding of that?"*

***Comment**: "If you figure 10 years out you will see a tax in place. A fuel tax."*

***Sue**: "Anything else?"*

Agenda Item G – Reporting

Dave Nordberg of DEQ presented information on California's web-based reporting tool for its LCFS program, currently under development, and then summarized the currently existing and planned reporting systems in Oregon that could perhaps be modified to accommodate LCFS reporting (DEQ air quality permits, ODOT fuel tax), or which could be developed in coordination with the LCFS system (second phase of GHG reporting).

Points raised during and after the presentation included:

- Does California's reporting system make any collected information about LCFS credits available to the public? ***Response** (CARB):* No, at this time no collected compliance information is available. Have not decided on whether to make this available in the future.
- Oregon will need processes in place to protect confidential business information.
- A more transparent reporting system will lead to a better-functioning, more responsive market.
- Who created California's reporting system, and who owns it? Would Oregon be required to use California's network? ***Response** (CARB):* CARB is designing its own system and will own it. CARB would give the system to Oregon, but Oregon would have to make adjustments.
- Does ODOT's system have exemptions built-in already for farm vehicles? ***Response** (ODOT):* Farm vehicles with plates are not exempt, but farm equipment is.
- Maureen Bock: The Oregon Transportation Commission is interested in developing an electronic system for fuels tax reporting, but this is not the first priority for agency funding. State statute requires that the first page of fuels tax reports must be on paper, signed by a company principal. Changing reports to all electronic would take a statutory change.
- Is there a market tied to the GHG reporting rule? Response: No, the purpose of the reported data is to build an emissions inventory. Only combustion emissions are covered. DEQ considered linking the GHG and LCFS reporting systems, but decided that it would not be practical because credit trading is part of the LCFS.
- Trading of credits is a unique aspect of the LCFS and needs to be taken into account carefully.
- Adding LCFS reporting requirements to existing ACDP and Title V permits would not necessarily add any efficiencies, just as easy to report separately. Could be legal ramifications as well.
- Chair Reeve pointed out that HB 2186 directs DEQ to look at possible ways to coordinate reporting obligations with existing programs, but that it may not be practical.
- Keeping reporting simple will encourage opt-in parties to opt-in.
- Several committee members expressed their support for using an adapted version of California's web-based reporting tool.
- It was pointed out that California's system is not yet finished. ***Response** (CARB):* CARB plans to have the system up and running by the end of June, when first reports are due.
- It would be beneficial for potential opt-in parties to be able to enter their information before opting in, in order to see whether and how much they could benefit by generating credits.
- Air quality permits seem an unlikely partner for LCFS reporting, GHG reporting seems more likely.
- Do companies have to enter just fuel volumes, or all lifecycle analysis inputs? ***Response** (CARB):* CARB system will have a library of carbon intensity values, as well as physical pathway information, so companies will choose which apply to them rather than entering detailed information. CARB plans to create a registration system for fuel producers, certifying their fuel's carbon intensity, which will simplify the reporting process.
- Oregon will have to modify CARB's carbon intensity library if we use different calculation methods, or if we decide to pool gasoline and diesel for compliance.
- Will electricity grid updates automatically be figured into the carbon intensity numbers in the library? ***Response** (CARB):* Utilities give them updates on a monthly and yearly basis. CARB will evaluate this information and decide what to put in the table.

- What is CARB's expected development and maintenance costs for the system? ***Response*** *(CARB):* They have not estimated these costs yet. Plan to have a dedicated server for this reporting system. They expect it will be much cheaper than a paper system, and are building in features to make reporting simpler for companies. *Response:* DEQ will have to estimate Oregon's incremental costs for adapting CARB's tool.
- Could DEQ use the LCFS system as the basis for the GHG reporting system? *Response:* Different reporters and emission quantification methods are involved, but there is some overlap. We will continue to consider whether it makes sense.

A general question about the LCFS committee process was raised: will the economic analysis be finished early enough in the process that the results can influence the program's design? Will there be opportunity for a feedback loop between economic analysis results and program design decisions? ***Response:*** The advisory committee timeline calls for the committee to give input on economic analysis assumptions at the June meeting, get economic analysis results in September, evaluate the results in October and take a big look at the whole program in November.

Are Oregon's economic analysis contractors going to look at the same five questions as Washington's? ***Response:*** Yes.

The meeting adjourned at approximately 4:20 pm.