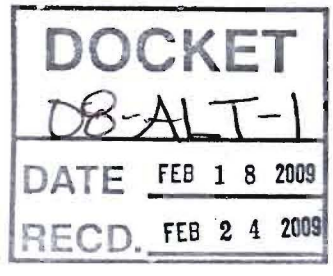
STAFF WORKSHOP

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:	)	
	)	
Implementation of Alternative and Renewable Fuel and Vehicle Technology Program	)	Docket No. 08-ALT-1
	)	



PORT OF LOS ANGELES ADMINISTRATION BUILDING

POLA BOARD ROOM

425 SOUTH PALOS VERDES STREET

SAN PEDRO, CALIFORNIA

WEDNESDAY, FEBRUARY 18, 2009

9:00 A.M.

ORIGINAL

Reported by:
Ramona Cota
Contract Number: 150-07-001

STAFF MEMBERS PRESENT

Rhetta deMesa

Pilar Maga¤a

Tim Olson

Peter Ward

ALSO PRESENT

Christopher Patton, Port of Los Angeles (POLA)

Robert Kanter, PhD, Port of Long Beach (POLB)

Andy Douglas, Kenworth Truck Company (Kenworth)

Robert Mejia, South Bay Workforce Investment Board/GREEN Workforce Coalition (SBWIB)

Bill Van Amburg, CALSTART

Paul Wuebben, South Coast Air Quality Management District (SCAQMD)

Eric Neandress, Gladstein, Neandress & Associates

Stephen Brueckner, (via WebEx)

Tony Picarello, Westport Innovations

Jennifer de Tapia, Trillium USA

Karl Hopler, City of Anaheim

Bill Walles, Technoplex Group

Christopher Perkins, Unimodal, Inc.

Enid Joffe, Clean Fuel Connection

Mike Lewis, Pearson Fuels

Greg Roche, Clean Energy Fuels

ALSO PRESENT

Nathalie Hoffman, California Renewable Energies, LLC

Mark Aubry, Smith Electric Vehicle Group

David Grantz, PhD, University of California, Kearney Agricultural Center

Gregory T. Smedley, PhD, One-Cycle Control

I N D E X

P R O C E E D I N G S

9:15 a.m.

MR. WARD: Good morning everybody. Thank you for coming. I am Peter Ward. I am the Program Manager for the AB 118 program at the California Energy Commission. I want to thank the folks at the Port for the use of their room and their hospitality for having us here today.

This is one of the key areas for our program as we look forward. We are now in the planning stage of this but we are about ready to shift gears and go into the program part of this, as opposed to the investment plan that has gone up to now.

I would like to note we have CEC employees here. There's Pilar Maga¤a just leaving the room and Rhetta deMesa. Tim Olson here as well.

Today we have a very good panel of presenters that are subject matter experts in the areas that will be affected by our program.

I want to welcome all those that are on WebEx as well. I assume we have some folks that are listening in as well. Welcome to you as well.

I appreciate the opportunity to be here

at the Port because as we look forward I think the ports and goods movement is going to be a key issue for not only California but for our program as well as look forward to the new fuels and vehicle technologies that we will be developing over the next few years.

I would like to make a couple of points. This is the fourth in a series of four workshops that were held around California. First we were in Fresno then San Jose and yesterday we were in Diamond Bar hosted by the Air Quality Management District.

We have, as I mentioned, some featured guests today and they will be making presentations. They are on the agenda that you hopefully got a copy of on your way in.

We have blue cards available up there if you would like to make a public comment during the public comment section of this workshop. That will be around the 11 o'clock hour, 11, 11:30. So we would like to hear from you. This is really the purpose of this workshop is to hear from the public and the public stakeholders. We would like to see if we can limit the comment to five minutes. If you have a short PowerPoint

presentation please see Rhetta or Pilar and they can help you load that in advance of that 11 o'clock hour.

The program overview. The program that we are here discussing today was established by AB 118, authored by then-speaker Fabian Nu¤ez. It was, I think, a landmark piece of legislation that did many things. It's main purpose is to watch the state achieve its climate change goals through the development of vehicle technologies and advanced fuels.

Provide immediate GHG benefits --

(Telephone line interference was heard.)

MR. WARD: Provide immediate GHG benefits to help the state achieve those goals and to create an impetus for the long-term transition from petroleum to cleaner fuels and more efficient and viable vehicle technologies.

The program itself is funded for about -- well at $120 million a year authorized. Next year -- This year actually that we are in $75 million, next year it is tentatively slated at $101 million. I should mention another side of the AB 118 is administered by the Air Resources

Board and they have about $80 million authorized on their side of it. So combined AB 118 is about $200 million a year for the next seven and a half years.

A key part of what we are going to be doing in the program, and I think it is a very important aspect of this program, is we are going to be establishing sustainability, a framework for sustainability for all the new fuels and vehicle technologies that we hope to establish and to bolster over the next seven years. This is key because we don't want to duplicate the unsustainable practices that we have seen here before. I think that is quite important. It will be a hallmark for this program as we see it.

We want to ensure economic development. As we all know in the last six months economic development has risen to the top as the economy is challenged, not only in California but across the nation. We think this money that is in this bill can be very useful in providing the economic development, jobs and workforce training for California that will be essential to bring us out of the recession.

I heard somebody say the other day, a

crisis is a terrible thing to waste. And I never really thought of it that way but I really think that the time that we have now has focused all our attention to this type of a program. The program that was just established at the federal side as well for economic benefits and incentives to provide economic development and workforce training and job creation.

The Energy Commission is required to adopt this Investment Plan that we are here to speak about today. We have been working about seven months on this, a re-draft from the July 9 meeting that we had in Sacramento. We are on the workshop trail now to gather comments on this Investment Plan. We want to hear from the public and the public stakeholders on the Investment Plan. And now we are hoping to adopt that next month at the Energy Commission.

The initial Investment Plan will guide the funding decisions for the first two years. Subsequent to that there will be an Investment Plan for each of the remaining five years of the program. But this Investment Plan will cover the first two years of the program since we are getting kind of a late start in this fiscal year.

We have convened the Advisory Committee and we have held five meetings. The last meeting we had on January 8 and discussed the Investment Plan with them. Now we are taking it out to workshops, revising the plan and finalizing it into a final committee document. This is a staff draft document. It will be going to a Committee document that will be approved by the Energy Commission next month.

As I mentioned, this has been available. The Investment Plan has been available for about two months. We met with the Advisory Committee on January 8. This is the fourth workshop.

The Transportation Committee is comprised of Vice Chair Jim Boyd and now Chairman Karen Douglas. Interestingly enough Karen Douglas gave birth to a little girl about a week or so ago. That was in the morning; in the afternoon she was named the Chairman of the Energy Commission. So that was a very full day for her but we are really pleased that she is our Chairman. She will be very, very helpful for this program and we look forward to her chairmanship for the good of the people of the state of California.

Consideration of the Investment Plan, as I said, is targeted for March. That's just next month. And we will go through the schedule a bit later too.

Projects that are eligible for funding. I can't really see the, I can't see the presentation from here but I do know it fairly well by rote at this point. It is for Alternative and renewable low-carbon fuel development.

Projects that optimize alternative fuels and engine technologies.

Alternative and renewable low-carbon fuel production.

Projects that decrease the fuel's life-cycle carbon footprint and increase sustainability.

There is the word sustainability again. This is going to be key, a key element here.

Alternative and renewable fuel infrastructure, fueling stations and equipment.

Improve light-, medium- and heavy-duty vehicle technologies for better fuel efficiency.

We will have buy-down programs for vehicles, advanced technology warranty or replacement insurance, development of market

niches.

Retrofits for medium- and heavy-duty vehicle fleets. Alternative and renewable fuel infrastructure development, workforce training, education and program promotion and develop -- we will be developing technology centers of excellence.

And analyses to support not only the Investment Plan but the program and inform the program as we go forward.

We were given many funding mechanisms that we can utilize. It consists of grants, contracts, loan guarantees, revolving loans, consumer rebates, direct fuel subsidies. And the one I like most of all is, other mechanisms as necessary. And co-funding and strategic partners will leverage funds.

So we are really looking forward to the partnerships we have enjoyed with the air quality management districts, possibly now the ports as well. Some of the engine manufacturers that are present today as well. This is a partnership program, we hope to leverage our money. Not just our money but we are also looking forward to the funding coming from the federal government as

well.

The preferences are stated in the legislation and they are to reduce life cycle environmental impacts, including air and water pollution, decrease life cycle greenhouse gas emissions by at least ten percent and those that do not adversely impact the sustainability of the state's natural resources.

We will be using alternative fuel blends of up to -- that exceed 20 percent, use existing or proposed fueling infrastructure, provide non-state matching funds to leverage our program, provide economic benefits to California, and drive new technology advancement.

The economic development aspect of this I don't think we can stress enough because this is really going to be a key I think as we develop new businesses and expand the existing businesses in California. This is an opportunity that we see with this money. And it will be most helpful if we can leverage that money with federal and private investments as well.

In summary, we developed this Investment Plan in a two steps. The first was to, as our purpose is to reduce greenhouse gases and to help

the state achieve its climate change goals, we established a feasible scenario for achieving the goals that the state has.

Those climate change goals consist of AB 32, which is the Global Climate Solutions Act of 2006. Again, that was authored by Speaker Nu¤ez and signed by the Governor in September of 2006. That sets into law the requirement that we reduce our greenhouse gases back to 1990 levels by the year 2020. In addition to that the 2050 goal as established by Governor Schwarzenegger's Executive Order, which establishes a goal of reducing our greenhouse gases 80 percent below the 1990 levels by the year 2050.

So those are the goals that we had to keep in mind to properly plan for this program so that we can actually achieve, work to achieve those goals, through different vehicles and fuels that will be developed, some of which we are not even aware of now. This is 41 years out. But we are keeping an eye on that trajectory, what would be necessary to achieve those goals.

These are not just goals though. These are, as far as I am concerned, one of the biggest challenges we have as a species. The earth is

going to be suffering from climate change and we are all aware of this. We have even gone backward in the last year, even as aware of climate change as we are we have reversed our field a bit and actually increased our greenhouse gases in the last year. That's a trend we need to turn around. I don't think there's any more important endeavor that we are all charged with right now is to reverse that trend.

This is a summary of the evaluation that we did using the Alternative Fuels Plan 2050 Vision. That was the Alternative Fuels Plan that was adopted by the Energy Commission and the Air Resources Board in December of 2007. We basically did kind of a back-casting from the 2050 Vision and populated it with our CALCARS model and came up with these results.

As you see in the green, those are the advanced biofuels. Those are the GHG emission reductions that we can accumulate over time from now until 2050. The blue are the fuel economy improvements that we hope to achieve by that time. The yellow are the electric drive and hydrogen contributions to GHG reduction. And at the bottom in the red, the natural gas, propane and renewable

diesel projections for GHG reduction over time.

That is not to say that this is a stagnant look. As a matter of fact the analysis that we did showed that there's an awful lot more -- a lot more information is needed to fully populate this scenario and others as we try to achieve the trajectory to achieve the 2050 goals and the 2020 goals as well.

Step 2 of this was looking at and preparing a Gap Analysis. This is an analysis of what funding is available for the different vehicles and technologies that we have out there. What is being done in research and development, demonstration, deployment.

And so from that we can determine where the gaps are, where our funding is necessary. Once those gaps were identified we also, working with potential stakeholders and partners to find out which of those gaps they could potentially fill. Those that remain are ones that we will be targeting for this program.

That is not to say that we -- This is not a stagnant look. We will be continuing on with this as we go forward. This is the preliminary look and we want to populate this and

find out more about the proper trajectory and keep abreast of all the vehicle technology developments and fuel developments as we go forward. So this is not a stagnant look. It will be one that goes forward from here.

We are looking to our stakeholders and our potential partners to help us determine where those gaps still exist. We understand that some of these gaps could be taken up by the stakeholders and the partners so we would like to, like to have that information so to make sure that we don't apply funding where it is not needed.

We have ultimate flexibility in this program year to year and within a fiscal year we can change the allocations that we will be going over here. We want to make sure that we are nimble enough to respond to the ever-changing developments and opportunities in energy, environment and the economy especially.

For the next portion of this I would like to call on my colleague, Tim Olson, to take us through the different categories for funding that we have established in the Investment Plan.

MR. OLSON: Thanks, Peter. What I would like to do is walk through this convention. Kind

of what we are using as a framework convention to describe all the different kind of allocation proposals. And wade in a little bit into fuel-by-fuel, technology-by-technology. How we see the proposed allocation.

And I think that's a good point to remind you that our workshops through today, we are reflecting our Energy Commission staff viewpoint of how this should be done. We have had lots of interactions with our Commissioners but it is still an opportunity, this process is still an opportunity to influence the final outcome. How we allocate funding, the rationale for that, and maybe even timing. So your comments at this workshop and also maybe even in writing into our record, our docket, are really important to us.

So the way we started this is the super-ultra-low, ultra-low and low-carbon. It's a structure to kind of show you where the options fall based on the relative greenhouse gas emission reduction potential. And also we recognize that that system can be seen as really rigid and we acknowledge that depending on -- each fuel and technology may have a different kind of classification depending on the origin of the

fuel, the feedstock, lots of efficiency factors.

And that as you see in our report that we are stating electric drive and hydrogen fall under the super-ultra-low. Well it depends on the feedstock. So if it is a natural gas reformulated hydrogen source it is not going to be in the super-ultra-low category, it is going to be a different category.

In the same account, a biomethane source of natural gas going into a CNG/LNG type of engine is going to be a higher, is going to be a more improved environmental footprint than just North American natural gas. You need to look at it as kind of a flexible standpoint. And we are just using this as a convention to show the relative greenhouse gas benefits.

The funding allocation, as you see -- you'll see, you'll see a theme throughout this that funding allocations follow what Peter called the flexibility. We have lots of authority, lots of flexibility in the legislation to allow us to fund projects.

But for the most part when you sum it up we are going to see projects and we think the categories are going to be more like we are going

to have fuel production kind of proposals. We are going to have fuel storage, blending proposals.

We are going to have a category for vehicles, two different types of things there. Vehicle rebates for technology that is close to commercialization, ready to go, a deployment strategy. Another vehicle category is likely to be a vehicle cost-sharing, prototype engine development, a different engine platform. The new technology that is near-term, ready to go into the marketplace but needs some demonstration and maybe some prototype development.

We are also likely to see a category that is related to the vehicle infrastructure. Fueling pumps, fueling systems. That can cover a lot of different fuel technologies.

We have also got a category that we call manufacturing incentives. And that, the point of that is to reward and try to retain, expand and recruit manufacturing in the state in what we call these strategic industries. And we are willing to provide incentives and we will go into a little more detail on that.

And then there is also, we want to -- When you sum this up we also want to aim some of

the incentives at the consumers, the individuals and the fleets.

And then there are some other things that we are doing with workforce training and some analytical things. SO that is kind of the overview and we are going to go through each one of these in a little more detail. Let's go to the next slide, please.

So this electric drive is one of the -- when you start slicing this up another way, fuel-by-fuel, technology-by-technology, this is what we are proposing in our Investment Plan in terms of an allocation. We want to set aside money for vehicle rebates. And that would be aimed at a number of different things.

But in electric drive what we want to do is, in conjunction with the Air Resources Board, conduct a program providing rebates for electric drive. So the way we view this, plug-in electric, battery electric, both from automakers, OEM products. And we want to open the door to refurbishment and retrofits. This is a -- This is an area that the Air Resources Board doesn't necessarily agree with. The Energy Commission staff feels that there is an opportunity here and

we are interested in pursuing this.

What we think is the time frame that Peter is talking about is from now. Very shortly proceeding with some solicitations. So within the next couple of months. Through June 30, 2010. That's the time frame that this $176 million is coming to us. We have ability to extend beyond that June 30, 2010 date. We have two years to encumber the money every year we get it. But we don't want to, we don't want to drag that out because within another year we are going to have another $120 million coming in. So it doesn't make any sense for us to try to postpone or delay things if we have good proposals, demand for projects and get the money out there.

So in essence what we are down to is two years of funding and looking at about 15 months of implementation time just to get the money encumbered. The actual liquidation can go much longer than that.

And that time frame for these electric vehicle rebates, we are looking at 500 to 1,000 projects or vehicles that we see are going to come into the marketplace that we know of demand at this point. That's kind of where we are on this.

Shortly after that within the next year we think that is going to expand pretty rapidly. The OEM projects are going to come in 2010, late 2010, 2011. Probably going to double or triple in that time frame.

Another area that we are proposing co-funding is vehicle pre-production prototypes. And this would be for two different kind of categories. It could be for light-duty but really primarily for the medium-duty, heavy-duty.

And what types of things are we interested in? Well again, one program likely to be in conjunction with the Air Resources Board with their AB 118 money is this getting new hydraulic, diesel hydraulic hybrid technology into the marketplace.

And probably numbers of 1,000 to 2,000 vehicles per year. It may be higher than that. But in essence our goal is to get in the range of, I think Bill Van Amburg may comment on this, get in the range of three to five thousand vehicles per year to get to that point where you get three to five engine truck manufacturers providing products.

And we can start accelerating from the

diesel hydraulic or diesel hybrid or diesel hydraulic hybrid parallel into some new technologies. The purpose of the prototypes: explore things like series technology, battery electric plug-in, accesorizing -- electrifying accessories on trucks and exploring a natural gas or other non-petroleum-based fuel in those trucks. So that's kind of what we are interested in over about a three to five year time frame.

In the next 15 months we are probably going to put some money in conjunction with the Air Resources Board into those early projects that are ready for market. The ones that are in deployment stage ready to go into rebates. The prototypes on the more advanced technologies, ones and twos. Looking at various applications like refuse trucks, drayage trucks, transit, school bus, utility bucket truck, package delivery. Those are the markets that we think offer some penetration, early adoption, and their drive cycles are matched to these new technologies.

We would also like to in the electric drive area start seeding money in the electric charge infrastructure. In California there are to our knowledge about 4500 existing charge points.

We think around 3,000 are going to be candidates for upgrading so that they will be accessible for all the plug-in hybrids when they are coming into the marketplace. In addition to that we would like to put -- So we are interested in spending money on upgrading those charge points.

We are also interested in putting money into new charging stations. And there are some really good business models out there, different companies that are good candidates to do this type of work. So we think the demand is there, we think the potential is there and we are proposing to put some money together.

We also in electric drive hope to put money into the non-road/off-road. This is where the port applications would come into effect. Some of those things we would highlight, definitely truck refrigeration units, maybe some of the port cranes.

A lot of truck stop electrification potential throughout the state. Just on TRUs, truck refrigeration units, about a quarter of the 200,000 trucks in California use TRU systems so they are a good market for this, switching from diesel to an electric application. So that's kind

of -- And what do we see there? Maybe 500 to 1,000 of those kinds of projects in this time frame, the first, first two years of our funding.

The cost on these. So one of the questions that might be asked, well have you looked at the cost of this? We need some -- As we go through we are going to be looking very closely at the differential costs. On a rebate for a vehicle we will want to look at what's the differential cost of an electric drive vehicle compared to a gasoline or diesel counterpart.

What are the tax credits that are applied, that are available from the federal government? Can they be applied? If you are a municipal government and can't get those tax credits there might be some avenues or ways to do that. But in essence we are going to look at the balance in terms of differential and look closely whether we can cover that full differential cost or part of it.

So there's a formula that varies from project to project. With electric drive a lot of the federal credits depend on the size of the battery and the capacity of the vehicle. So the maximum is about 7500 per vehicle, in some cases

it is much lower. So that's kind of the electric drive approach.

Let's go to the next slide on hydrogen. And what we are proposing here is -- no, we are not proposing to provide any vehicle rebates. In the most part these are very expensive vehicles, almost in a kind of early or advanced prototype stage. They are in the marketplace but they are for the most part not, as many of you know, not sold, they are really leased by automakers and they are in trial fleets.

So we are not proposing to co-fund those vehicles but we are proposing to cover some of the costs, the cost-sharing of the infrastructure for those vehicles. So we have got kind of a dual approach there. We are willing to put aside money for the OEM products and where their customers -- providing cost-sharing for fueling infrastructure where their customers are located.

We are also interested in exploring what we call the multiple use applications. Hydrogen use in vehicles, OEM products, but also in transit systems. We know that the hydrogen also has a big potential with forklifts in distribution centers and there are several other applications there.

So in essence we are posing this question. Can you locate a fueling station that might be able to service more than one application and might even have a different, even if it's a distribution center with a fueling application for forklifts, and a public access for vehicles. We don't know whether that's a potential but we want to explore that.

We also want to, in hydrogen want to dedicate some money to help the development of the renewable sources of hydrogen. So right now by state law, any funding that goes into hydrogen development from the state government, we need to have a third of the resource from a renewable source. So we are willing to put some of our money into the development of some of those renewable sources.

What might they be? It might be a biomethane source that you are extracting hydrogen from. It might be a wastewater treatment plant type of application. There are several companies that want to explore this and they have access to those sources.

And we also may be open to vehicle demonstrations in hydrogen, whether it is in a

transit or other type of application. We might even be open to hydrogen ICE applications if you can show that there is a transition to a lower greenhouse gas emission fuel cell type of product in the future. So we want to hear those ideas as we are going forward on this.

Let's go to the next category, ultra-low-carbon. I kind of mentioned that. For the most part this covers the biofuels. But there are instances where natural gas will come into this area depending on the feedstock. And let's go to the next slide where I can get into the actual details of the biofuels.

So in this case our expectation is that the marketplace is handling most of the vehicle applications and that unless we hear otherwise that there is no need for vehicle rebates or incentives. Maybe we are hearing some things -- And I'm speaking mainly in the light-duty sector. But we may be interested in some of the heavy-duty if there are some barriers or channels that need addressing and our funding makes sense for it. But for the most part what we are talking about is a range of things from the fuel production, fuel blending and the fuel infrastructure.

Fuel production, a little bit of a challenge there given that even though we have $176 million and around 120 rolling in after that every year, most of the biofuel production plants are low-end, 45 to 50 million dollars, high-end, 200 million dollar projects. So we are asking this question, how are -- if we are doing some kind of allocation of money on a fair basis are we going to really have more than ten million, five million, ten million dollars for any kind of project like a biofuel production? Maybe not.

But you can look at it in a number of ways. And one of the things we are asking people to consider is quite often these projects take two or three year construction year -- two-year/three-year construction time frames and we are asking people to kind of break down the project into stages.

So an initial stage would be a feasibility step. Quite often investors are requiring this now for these kinds of investments. Time frames can be six months to a year. At the end, the end of that point the project has obtained the permits and ready to go to construction. That's an area that we think the

Energy Commission funding can have some influence. Screening, evaluating, getting the project to the point where it is investment-ready.

And also from the standpoint of defining what the environmental impacts of those biofuel production plants are. Using that feasibility step to influence our decision-makers on whether they want to spend additional money on a fuel production incentive. So that might be the approach we take.

These projects may be also suited for loans or loan guarantees. Particularly the large amounts of money and close to commercial availability. So we do have the capability of taking say a $3 million award. It could be in the form of cash. Or it could be used, that same $3 million can generate 10 to 1, up to 18 to 1 debt pool for that same project. So we are open to that approach.

We can explore through our funding arrangements to get a loan guarantee system in the State of California through the State Treasurer's office and also the State Infrastructure Bank. We can use those kind of methods to buy down commercial bank interest rates, cover the default

rate, the potential default on loans and also cover the transaction cost of loans. So we are open to this not just on infrastructure but even on vehicles if there is a significant program that you think might merit a loan approach.

The other kind of project that we are going to see in biofuels is the fuel blending. This is primarily biodiesel renewable diesel. We think there's a challenge out there, a barrier of trying to get logistically -- to grow this potential fuel from around 40 million gallons a year to the 400, 500 million gallons per year.

It is going to take terminal blending. Most of the companies, all of the companies in this field are independent, fairly small, mid-size. They are not major oil companies. And there is going to -- there right now is a logistic Northern California/Southern California issue with having enough capacity to expand that fuel. So we are open to providing some, some seed funding to get those two or three projects established.

We also would like to see expansion of the ethanol from the E-10, E-5.7, E-10 blend to an E-85, closer to a neat fuel. And to do that you are going to need additional fueling stations. We

estimated in our analysis that we will need about 2,000 of those station pumps. Those stations located in urban areas, strategic points in California. And at that point we will have a foundation for that type of distribution.

Right now there are 400,000 flexible fuel vehicles in California that can use that fuel. Every Detroit automaker has committed to half of their new vehicles will be FFVs. FFVs have the ability to use the low blends, they also have the ability to use the E-85. So we think that in this next funding round we would like to propose funding of anywhere from, it could be anywhere from 50 to 200 of those kind of sites in the state. And we are looking at a cost-share way of doing that.

I just wanted to mention that on the fuel production facility that may be our biggest challenge. What would happen if we do nothing in that area and just kind of proceed as if it may happen or not happen? There is a policy that we are trying to address here and that's this California Bioenergy Action Plan in which the objective is an Executive Order signed by the Governor, also a plan that involves several

agencies.

And the idea is to build these projects in California. There's definitely economic benefits of doing this to meet the goals that are stated in that plan. In 2020 and 2050 we will need 30 to 60 of these projects located in California. If we don't do that then it will be imported fuel and we will just have to follow the Low-Carbon Fuel Standard requirement to sell it.

Let's go to low-carbon fuels. And this again, as Peter mentioned, the natural gas and propane would fall into this category. Let's go to the next slide and we will go into a couple of details.

Natural gas. We suspect -- This is an area we would like to provide incentive for a number of areas. You will notice in our Investment Plan that this has a, when you look at the total amount of money allocated here it is significant compared to the other categories. And it reflects our, our kind of summing up of what is going on in the marketplace and the responses we are seeing of practical, real projects that could come forward. We would like to see higher greenhouse gas emission reduction benefits but we

think this is a good option. You still get something pretty significant and earlier than other fuels and technologies.

With natural gas we also will propose to provide vehicle rebates. There is one category in the OEM product light-duty. There is one automaker, Honda makes a vehicle. They are going to be a candidate for those rebates. In the medium-duty/heavy-duty, a whole range of applications that are going to be candidates. And again, we are looking at differential costs. The rebate idea is the differential cost between a gasoline/diesel and this case a natural gas or propane option.

And again, we want to look at what are the federal credits that offset that and then what is the remaining balance that we would look at. I suspect most of these are going to be for medium-duty/heavy-duty. If there are significant numbers we are going to be looking at a negotiated differential cost.

For vehicles -- We also would like to put money into the vehicle prototype development. Again, we would like to see an expansion of more than one engine platform beyond the Cummins

Westport option and we are willing to put money into that area to help create that new engine. And we would like to see that applied in different configurations with hybrid technology.

The same thing with propane. We do not expect a lot of options on propane to come forward. But we know that there are some retrofits and refurbishments that we think will be candidates and there could be some prototype development there.

We also would like to put money into -- just going back on the vehicle development, technology development. I mentioned some of the applications before. The same type of applications of natural gas, refuse, drayage, transit, school buses, package delivery, utility. There may be others that we want to look at.

In infrastructure we are willing to set aside some money for natural gas infrastructure but for the most part we want to look at a couple of approaches here. We think there are about 150, 200 different existing fueling stations, mostly in Southern California. Most of them are under-utilized and so before we put money into new projects we want yo see that capacity upgraded.

Some strategies on how to upgrade. And that might mean more public access, it might be other strategies you can think of.

We know of some infrastructure that is aging and will be candidates for this money just to make an improvement so that it can service existing natural gas fleets. We also suspect that we will set aside some money for new projects. How many? Maybe, I don't know, maybe 15, 20 but not significant numbers.

We also in the natural gas area would like to explore bringing lower greenhouse gas emission fuels into the market through natural gas sources. That could be biomethane, it could be hythane, HCNG blend with hydrogen. We want to look at those kind of options. How natural gas can show its benefits as a transition fuel. Not only dedicated by itself but also as a transition fuel to some of these other areas. And looking for some demonstrations or some commercial applications of that.

So let's go on to the next one. And propane I think is primarily limited to vehicle rebate for refurbishments. It could cover some infrastructure but it kind of depends on what we

see. We haven't seen a lot of proposals at this point or proposal ideas.

Let's go to that slide there on vehicle efficiency. So there's a category here that we wanted to set aside funding and I think it is around $22 million for vehicle efficiency, whether it is a system, a vehicle component part. This is another area we want to explore. New engine designs, propulsion systems. Any kind of technology on a vehicle that is going to improve the efficiency of the operation, improve the efficiency of maybe moving the goods or people. We are open to lots of, lots of ideas here. Likely to be kind of cost-shared kind of demonstration type of projects at this point.

And let's go to the next category. Go to the next, the next slide after this one. Yes, right here. I'm out of order here.

We have several categories we call non-GHG reduction categories. So these are the things I mentioned before, the workforce training, the sustainability work, some codes and standards development and the kind of education programs.

For the most part these are going to be, some of these programs could be with other

government agencies like the standards and guidelines type of thing. We definitely need some work in the hydrogen fuel standard setting, biodiesel above the E-5 standard setting. That is going to require at least one government agency in Sacramento so we are in discussions on providing some resources to develop those.

The sustainability category is important to us. It is really the key. It's is one of the, it is the key driving factor around projects. So you will see that in the criteria as we are putting out our solicitations and our funding agreements.

So what we have concluded is we need a method to track some of this stuff and we are looking at a number of different ideas on how to monitor, how to record greenhouse gas emissions. And as we are looking at kind of the origin, particularly of biofuels, the origin of the fuels, the pathway. We need some kind of protocol and tracking system. And that's what this refers to. It could be other ideas that we hear from people.

But in essence we are looking at trying to develop a tracking system, best management practices. A number of different things that will

help us record and monitor and evaluate what's happened. What kind of greenhouse gases did we get, what was the impact going back to the origin of the fuel. For the most part since that is the real key criteria we kind of recognize that we are going to have to spend some effort and time and make sure we are managing that and evaluating that properly.

Workforce training and education. Quite a few proposal ideas from a couple of different state agencies. Working with probably community colleges, some different training, existing workforce training programs. This is an area where we, where we think a lot of creativity and new ideas we are hoping to see come forward to us. Let's go to the next slide.

And just a couple of things on analysis. We have another RFP that is on the street right now attempting to hire experts to help us contract, under contract to us to help in these evaluations and seeking out the co-funding. A whole range of things we are going to need to support us technically in this. And that is a separate, that is not funding coming out of our AB 118. It is a separate category that is just for

our support work.

And let's go on to the next slide. So one other category is this area where we are willing to provide incentives to, as I mentioned before, retain, expand, recruit manufacturing in California. That could be -- Ideally it could be a vehicle manufacturing plant, more than likely it would be a component part. It could be an assembly type of system. And it doesn't stop -- limited to vehicles. It could be manufacturing of equipment that is used to produce other products.

Right now there is some existing, there is one significant existing incentive from our Governor's office and that is waiving the sales tax on the purchase of equipment used in manufacturing. One company has received that as -- Well actually more than one I think at this point but one is notable. The Tesla manufacturing plant used this incentive to basically expand their manufacturing in the San Jose area. The incentive was a significant, several million dollar offset that they didn't have to pay, just to keep, stay in California.

And part of that, the rationale for that by the way is California is one, I think it is the

only state that has double sales tax manufacturing equipment. It is a peculiar thing in law that most of the other states don't even have a tax on this. In essence the Governor sees this as leveling the playing field, that is why he is willing to provide it.

We can use our money to augment that in a variety of ways. And also in conjunction with enterprise zones and other local incentives. So that's something to keep in mind in addition to an actual project or product. It's the manufacturing equipment that might accompany that.

And let's go to the next slide and I think we are -- Oh, this is a summary in the report of the kind of breakdown by those, that convention, ultra-low, super-ultra-low low carbon, and then the other non-GHG.

In essence, how was this created? Based on our analytical work. But also reflecting kind of ground truthing practical ideas and proposals that we have heard from people over the last six months. I think Peter and I and others have been involved in close to, I'd say, 150 different meeting with people. We have gotten lots of good input on this. These workshops are another step

in that. And we are ready to start awarding money as soon as we can go through these other stages. And I think the next slide goes back to Peter.

MR. WARD: Thanks, Tim. I want to go over the Advisory Committee. As I mentioned we have an Advisory Committee established by the statute and they have been helping to guide the development of this Investment Plan.

We had our fifth meeting on January 8 and some of the recommendations that they gave us include the following:

The mentioned that we should be emphasizing more on 2050 as opposed to 2020. Most of the funding that you see there was developed for 2020. That is the statutory requirement of AB 32, the Global Climate Solutions Act, of achieving 1990 GHG levels by the year 2020.

They mentioned that more dollars should be dedicated to the super-ultra-low-carbon category. That is the electric drive and the hydrogen.

Mixed feedback on the benefit of funding retrofit and conversion projects. In other words, we had some on the Advisory Committee that supported that, some thought it was not a good

idea, so it was mixed.

There was stronger support for EV fueling infrastructure and distribution-level infrastructure.

More focus on the economic development as a potential for the program. That is something we certainly all agree on at this point. This is something that has really risen to the top as far as in our view in the last six months and probably in everybody's view as well.

Additionally they said there was a need for a better understanding of how sustainability criteria will be applied to the competitive solicitation process that we will be coming up with.

More support is needed for the high-risk technologies.

Need to develop a more compelling argument for the program. I don't think that there is much more of a compelling argument than the system that we know as earth is going to be failing us and imperil our future as a species on the planet. It is certainly ever-present in our, in our program development and it is the number one purpose of the program established by statute.

The cycle. They suggested that we cycle returns from investments backs into the program. And this is a little bit problematic because this is a seven year program and many of the projects that we would fund may not have a return that could be adequately utilized in the out years. So we have taken our comment. We would like to investigate how we can do that. But it is not clear to us right now how many would.

And need a stronger link between the K through 12 education and workforce development. We are going to be having a presentation on workforce development from our panel today.

Next is our program implementation schedule. As I mentioned these are the four public workshops. This is the fourth of four that we are holding here at the port.

Next month we will be completing the revision of the Investment Plan. The staff draft Investment Plan will turn into a Committee final document and then we hope to have that taken up at a Commission Business Meeting in March.

In spring of 2009, I am not saying any one month but spring, we are hoping to be able to release the solicitations.

As Tim mentioned, we have several parallel paths going forward, one of which was the establishment of regulations that were required to clarify the statute language for us. Those have been filed with the with the Office of Administrative Law.

We have just I think completed our 45 day review period I think as of yesterday and hopefully we will be going forward to be in schedule to have those enacted by the Secretary of State in late May. That is when the money can flow, once we get those regulations established by the Secretary of State and not until. But that doesn't mean we can't do other things.

Another one of these parallel paths, in addition to the regulation development and the Investment Plan preparation that we are talking about today. We have begun the process of preparing solicitations in each of these areas that Tim described and we are hoping to release those, as I say, in the season of spring. Not in any one particular month but the sooner the better.

What we hope to do is to be in a position to actually fund projects the day after

the Secretary of State enacts our regulations into, into statute. That means we would be going out to solicitations, receiving proposals back, evaluate those proposals, go to a Commission Business Meeting for approval of those recommended proposals, and have those in queue, if you will, for the time that the Secretary of State enacts those regulations. At that time the money can flow.

We are already planning a series of inter-agency agreements with other state agencies to help get some of the funding out quicker to necessary areas that we have identified through our stakeholder process as well.

That is pretty much the schedule that we are on. That is our presentation. I would like to ask if there are any clarifying questions, either from anyone in the audience right now on what we have just gone over or from anybody on the phone? Yes, Eric.

MR. NEANDRESS: You had mentioned the solicitation is out there on the street right now.

MR. WARD: One second. Can you come up. I'm sorry, I should have said this earlier. Come up to the podium and identify yourself for the

court reporter.

MR. NEANDRESS: Eric Neandress with GNA. You had mentioned the solicitation is on the street right now. I was wondering if there is any prohibition or anything like that, participating in that as well as the 118 program?

MR. WARD: That's the technical support contract.

MR. NEANDRESS: Correct.

MR. WARD: I don't think there is. No, I don't think there is. You can feel free.

MR. NEANDRESS: Good answer. Thank you.

MS. MAGA¥A: Peter, one question on the phone.

MR. WARD: One question on the phone.

MS. MAGA¥A: This is for Tim. Is it possible to span across more than one of the areas you described like hydrogen and biofuels or biofuels and low-carbon fuels with one project?

MR. OLSON: So I am just going to repeat that question for the recorder/transcriber here. Can you cross over from one technology to another, one field to another in a single proposal?

Yes, we think, we think that makes a lot of sense. We will probably have a category just

for those kinds of proposal ideas that are integrated and cover maybe vehicle infrastructure. So part of this might be coming from say a fleet or a local government or some consumer. It is going to be probably a fleet for the most part or some local government or business entity that wants to do more than one thing. Can they? Yes, of course. We'll just try to figure out how we do that in a solicitation, how we set that up.

MR. WARD: Yes sir.

MR. PICARELLO: Hi, I'm Tony Picarello with Westport Innovations. And I was just wondering if you could expand a little bit on your comment. The way I understood it is that you are looking forward to putting some investment monies to create a competitor to Westport or CWI. I'm not quite sure what engine size you are looking at. But obviously Westport and CWI has invested a lot of private capital money in creating a product and I am just curious on the rationale for that comment, thank you.

MR. OLSON: Well, I wouldn't necessarily -- I can see how you see it might be a competitor coming into the marketplace but I think the approach we are looking at it this. We are not

restricting Cummins or Westport or Cummins Westport from pursuing some of the same things, same ideas on the prototype development.

We would like to see that, we would like to see more of your products. But for this really to expand into a mass market it's got to be more than one, one engine platform, or else we are going to be at 97 percent dependency on petroleum for the rest of the next 50 or 100 years.

This goes for pretty much any area. From a business standpoint we have got to -- For any market to develop from our standpoint you have got to have three to five competitors in a marketplace, working at a level where they are meeting their, whether it's assembly line or trigger points. And that's the ideal thing we would like to see. And it may take 30 or 40 years to reach that, I am not saying it is an overnight type of thing.

So we are encouraging partnering too for that to happen. We know that that's -- I am going to use an -- There is an example in the fuel infrastructure area where individual companies who have various attributes and capabilities are starting to team up. And they are doing this type

of thing that this person on-line asked about. Can you match up different fuels in one kind of proposal. In some cases it might be multiple fueling sources at one location. And that, that's going to require a different kind of business configuration than exists today.

So that's the kind of creativity we think has to happen for this market to mature. It is not meant to -- Whether that creates competition and problem for you, I am not sure how you -- You are the leader in this so your company is open to pursuing the same kind of projects. And we are going to go with performance.

MS. de TAPIA: Hi, I'm Jennifer de Tapia with Trillium. Just curious about, given the state of the budget crisis in California, how secure is this funding?

MR. WARD: That's an excellent question, isn't it? Every day we hope for a budget solution in Sacramento. We, I know, haven't gotten one. I heard that there were some developments as far as leadership of the different caucuses yesterday. This funding is vulnerable just like any other funding in California is at this point as we don't have a budget.

Tim mentioned the work with the State Treasurer's Office. Obviously it is problematic at this point because our bond rating is so low. We were hoping to be able to use tax-exempt bond financing for some of the loan guarantees as well. Until we have a budget that is not going to be available either and there will probably be a four to six month lag period until -- from the day we get a budget until bonds become attractive again.

There are no assurances that we have right now. We do hope that the, that the emphasis that we have placed on economic development, workforce training and transitioning to cleaner, low carbon fuels is sufficient impetus to keep this money intact. We are certainly hopeful.

I think California is going to be well-suited to be able to use this money to match much of the federal money that could be coming our direction as well. I think that is particularly important. A state match will help us and advantage California in securing some of that federal money as well. So I'm hopeful. No assurances. Any other questions of a clarification nature?

MR. HOPLER: Good morning. My name is

Karl Hopler from the City of Anaheim.

I am just wondering if you have any plans to work together with some of the other various regulatory agencies to kind of streamline the process for getting product out there?

And also to try to get the different rules and regulations combined. You have the diesel -- you know, an electric hybrid is a wonderful idea but it violates rule 1196 from the Air Quality Management District so I can't buy a diesel hydraulic, even though I'd like to.

And some of the smaller manufacturers that would really like to come out with a product like the Roush Ford F-150 propane, having problem with the CARB, getting it certified for Southern California. So now they have got to come out as an after-market kit, which is not as attractive as an OEM-type vehicle. So is there any plan to work together with the various agencies to kind of streamline this and so everybody is kind of on the same page and working together? Thank you.

MR. WARD: Excellent question, Karl, thank you. We have identified and need to support the standards and certifications for the fuels, vehicles, fuel stations and storage media, et

cetera, because I think that really is important as we ready the market for these cleaner fuels and more advanced vehicle technologies.

You raise a good point because we are already engaged in discussions with the Department of, the California Department of Food and Ag Division of Measurement Standards and the Water Resources Control Board to see if we can help with some of the underground storage tank issues as well. I think those are critical.

We do think it is important to be able to ready the market, smooth the introduction of these fuels, rather than apply incentives to them and then help them just bump up against the impediments. It is something that we have identified and we are allocating funding of a non-GHG category for that. We do have representatives from other agencies with us today, South Coast particularly, and maybe Paul in his presentation later, he will probably address that as well.

We are trying to form partnerships with other state agencies and local agencies to see if we can address these things because it really doesn't make sense and it really undervalues the incentives we would apply in this area, if they

are applied just to bump up against the impediments and barriers, I agree with you. So it is on our radar screen. Thanks for the question.

Any other questions, clarification?

Then I would like to introduce our first presenter of our stakeholder presentations. This is Christopher Patton, our host for the day from the Port of Los Angeles. Christopher, thank you.

MR. PATTON: Good morning, Peter and Tim. Thank you very much for that very excellent and comprehensive overview. We are very pleased that we could host this here today, it is very exciting.

My name is Christopher Patton. I am an environmental affairs officer with the Port of Los Angeles. I am representing Mike Christensen, our deputy executive director, who regrets he couldn't be here. He had to go down and attend a very important meeting at City Hall this morning. I will be co-presenting with Dr. Robert Kanter from the Port of Long Beach. I am going to make some opening comments, try to set the stage, and Dr. Kanter will talk about what we see as some key benefits to a strategic alliance.

I want to say first of all that sitting

here listening for the last hour, there is a remarkable alignment of goals between your program and what is going on here at the San Pedro Bay ports, the Port of Long Beach and the Port of Los Angeles. In the area of primary pollutant control strategies, GHG control strategies. Fleet transformation, fleet and fuel transformation, fuel efficiency measures and technology advancements. So I just want on behalf of both ports to say at the get-go that we are really excited about this and want to get to work with you.

We have a number of significant programs underway and I will very briefly go through those, and some that are planned. Dr. Kanter is going to discuss, as I said, what we see as some real benefits to be derived from a strategic alliance partnership and how your program and the opportunity to co-fund some of our initiatives is really going to enhance and accelerate our programs. Okay, the next slide, please.

I think this slice really tells an important story. I think Peter at the very beginning of his presentation alluded to the fact that goods movement was a target area under this

program and I can't agree more. I think that this slide, and I am going to go through the bullets quickly, reiterates that the goods movement sector provides a high opportunity area for fulfilling the goals of AB 118 and AB 32.

The port complex here, it is the largest container port complex in the United States, handling over 40 percent of all imported goods. We are the fifth largest complex in the world. We handle two-thirds of the total container traffic passing through the west coast ports. And the activities that take place here account for about $300 billion in annual trade.

And I think one of the things that caught my ear has to do with jobs development and economic development. The fact is we are a tremendous economic engine, not only to this region but the state of California. Responsible for over a million port-supported jobs. Okay, next.

But there are challenges. And I think many of you sitting in this room are aware of those challenges. They are both air quality as well as greenhouse gas challenges and they are significant. The South Coast Air Basin has some

of the worst air quality in the nation.

And as you can see from the pie charts down below, the two ports are fairly sizable contributors to primary pollutants as well as diesel particulate matter. And this will increase over time unless the two ports aggressively pursue the plans and programs that we have underway today.

However, since now we must be aware of dual challenges, both ports have recently completed emission inventories that determine what our GHG or carbon footprint is from port-related operations. And it is, again, not insignificant. As you can see the combined footprint of both ports in 2007 is about 2.8 million tons. Next, please.

So on the primary pollutant side. And I want to emphasize that I am only going to talk about primary pollutants in our Clean Air Action Plan, which was designed expressly to reduce the environmental impact report operations. A lot of those measures have co-benefits for reducing GHG emissions. And increasingly we are looking at strategies that meet the dual tests.

But the fact is we have, you know, we

are this huge complex, this major economic engine. We are facing these environmental challenges. And now there are also some regulatory challenges. And so the two ports needed a response.

Two years ago, almost three years by the way, the ports developed the Clean Air Action Plan and I'll show you that in a minute.

But it was derived, it was a response to the need for innovative strategies to address really four key areas, minimizing the health risk and the overall emissions from port operations.

Accelerating the emissions reduction efforts that were already underway by our port operators. In fact, many good efforts had been underway for four, five, six, seven years, resulting in reductions in cargo handling equipment and specifically a program we are very proud of which -- the shipping industry voluntary participation in our vessel speed reduction program.

We wanted both ports to set consistent, project-specific and source-specific standards so that our customers and our tenants were clear on where we were headed and what the performance requirements were going to be.

And then we wanted to use those standards to ensure that we tracked achievement of the goals.

And quite importantly, we set about this task of developing the Clean Air Action Plan because we wanted to enable port development. We had not as of 2006 had a major terminal modernization project in many years. And in fact through terminal modernization we could achieve efficiencies. We could achieve green growth. And we needed to set the stage, set the framework, for getting back in the business of doing that. In short, we wanted to craft a plan so that we could grow green. Next.

The Clean Air Action Plan, I am sure many of you know about this. It is a partnership effort developed in cooperation in both ports, the Ports of Long Beach and LA, the US EPA, California Air Resources Board and South Coast Air Quality Management District.

It is a comprehensive plan. It covered five major source categories, ocean-going vessels, cargo handling equipment, heavy-duty trucks, rail and harbor craft. And within that plan it laid out the performance standards and the measures

that we were going to employ through various mechanisms such as lease renewals and tariffs.

That plan is now two years old. You can see that it was adopted by a joint meeting of our Board Harbor Commissioners back in November of 2006.

And we are right in the process now of producing the biennial CAAP update. And the important thing I want to mention is that we made a commitment, both ports made a commitment with the first CAAP to develop baywide standards for health risk reduction and emissions reduction over time. That will be a key element of the upcoming CAAP update, which will provide the long-term or down-field view as to where we have to head.

A key element in the plan was that we recognized that of the currently available, commercially available, feasible strategies we didn't have enough tools in our toolbox to get us to where we needed to go. And so a key component was the creation of our Technology Advancement Program, to put more such tools in the toolbox.

As you can see this was focused on primary pollutant reductions as I mentioned; health risk reduction is also a key part. But

overall we were looking at about a 45 percent reduction in the environmental footprint from port operations over the first five years of the plan.

A key thing I want to mention. All good plans need to keep report cards and we laid out a series of reporting mechanisms, annual emission inventories, air monitoring networks, et cetera, through which we determine how well we are tracking and achieving that five year, initial five year goal. Next.

There are a number of key programs under the CAAP. There are three key ones shown here, which we think have a particularly good alignment with the AB 118 and AB 32 goal.

I'm sure everybody here knows about our Clean Trucks Program. It is a very ambitious program to completely modernize the drayage truck fleet over a period of frankly less than five years. By January 1st of next year the lion's share of that fleet will be brought to 2007 model year standards.

However a key commitment that was made by both ports was that in achieving this fleet transformation that we wanted to strive for a significant component of alternative fuel trucks

in that fleet transformation. Our goal is 50 percent and we are striving very hard to achieve that.

It is, though, a very expensive program, estimated at over $2 billion and we have a variety of funding sources. But the port drayage industry is one that needed that financial assistance and it is one that we specifically called out in the CAAP as one that we needed to pay attention to in terms of the economic assistance.

Fueling infrastructure is also a key element of the Clean Trucks Program. We have at one licensed motor carrier site an existing fueling facility. And both ports are working right now on developing a publicly available one, a larger, publicly available one. Again, that I think aligns well with your program goals.

Technology advancement. It is a five year commitment but it will go on beyond that. Both ports commit together $3 million a year to support demonstration, verification and acceleration of new technology, commercial availability of new technologies.

Again, one of the things that we look for are the co-benefits in terms of primary

pollutant reduction coupled with GHG reduction. But increasingly what we are seeing is the tremendous opportunity for technology transfer to other ports where we can provide the test bed for that technology.

In one illustration or one example we have also brought about and nurtured a key technology, an electric yard tractor and dray truck. It is in its second phase of demonstration and we are proud that that particular vehicle is being manufactured in the nearby community of Wilmington. We hope that that's the kind of synergy where we can combine environmental needs with technology advancement, with jobs creation and green growth. And I think we are on our way to fulfilling that. We certainly want to couple up with this to enhance that.

Shorepower. We call it AMP at the Port of LA. It is shore-side power to ocean-going vessels. A significant benefit in terms of primary pollutant reduction. It also frankly is a big, is a big contributor to GHG reduction goals.

Our goal, we are going to commit between the two ports $400 million to install the power transmission and shorepower infrastructure for

container, crews and selective tanker operations.

Although not on this list I want to mention that there are other source categories and we are doing some very exciting things in those other areas in terms of off-road equipment, hybridization and electrification, harbor craft.

I think many of you saw last month the unveiling of a partnership with FOSS, a public/private partnership for a hybrid tug. We are very excited about that. I think that meets multiple goals here, fuel economy, GHG reduction, primary pollutant reduction.

We are just in the final phase of a yearlong test of an LNG switcher locomotive by Pacific Cargo Lines, the switcher operator here in the port. So we have a number of things going on that go beyond this list.

I think the bottom line, literally the bottom line though, is that all of these programs take money. And we have some existing funding sources, we are clearly looking forward to working with the CEC to enhance those funding sources so we can accelerate our goals. Okay, next.

This does kind of frame it. The two ports committed about $420 million to co-fund the

strategies in the CAAP. A lot of that had to do with the Clean Truck Program and the shore-side power infrastructure.

We had identified at the time a number of potential funding sources to augment our own revenue funds, contributions from industry, from our customers, tenants. Prop 1B money, which we still hope to secure, and co-funding from state and federal programs. And this particular one is a very exciting one to help us fill some of those funding gaps.

And then container fees. For those of you who follow the news, today we are going to start collecting our container fees to help that Clean Truck Program and its fleet modernization goals. Okay.

With that I am going to turn it over to Dr. Robert Kanter. He is going to describe some of the areas where we think we are uniquely positioned to partner with you in a strategic alliance. To not only achieve your program goals but to accelerate our stated goals, both in the area of the primary pollutant reduction as well as greenhouse gas reduction.

(Applause.)

DR. KANTER: I first of all want to thank the CEC for inviting us to come here today and share some of our ideas and I want to thank Christopher for setting the stage for this.

This is a really exciting opportunity. I think what you hopefully will hear is a theme. Just as you have heard for the incentive programs and the revitalization programs and the other programs nationally and right here in the state, what we are looking for is, if you will, shovel-ready participants. And I think you should get the sense already that the ports are shovel-ready. As I go through my presentation today I hope to emphasize that we think we have the ability to partner with you strategically to get things moving very quickly with shovel-ready programs.

As you know AB 32 sets out some very, very aggressive goals for those of us in the state. Since our ports respectively are in different cities we have commitments and obligations to align with the overall city programs that are geared towards AB 32.

That being said, the ports are still working very, very closely on all the strategies as Christopher described because, in fact, it

makes a lot of sense to combine our resources where we can. We do have programs that will ultimately work together but also be integrated into our city's programs and that is an important distinction. Whereas the CAAP was somewhat isolated from our cities' activities, we must as departments of our cities, be very much integrated. So we have got some dual responsibilities here.

One of the key things that was mentioned by Christopher is the fact that we have already done inventories, complete inventories of the activities here that generate greenhouse gases, as well as the priority pollutants. We have a good handle starting back in 2006. And those are activity inventories, those are not just modeled ideas. In fact we look at the mobile sources, we look at their activity duty cycles and our calculations are based on actually very accurate data and an ability to monitor and report on the changes that will occur as we go forward.

We have within our respective organizations, again, documents that refer to very port-specific programs. But again they are ones that go across the entire San Pedro Bay Port

Complex and I'll touch on some of those today.

We focus on mobile sources but there are indirect sources as well. Again for those of you who aren't familiar, the ports are landlords. We don't really operate the terminals, the vessels, the trucks, the trains, but we have a very big responsibility to help manage plans to reduce their footprint. And so we use mechanisms within our power, incentives, lease obligations, other tariffs that we have the ability to implement that will allow us to get at reductions from these sources.

As Christopher indicated the CAAP was a very aggressive program. Everybody who looked at it said, you guys have undertaken quite a bit, over $2 billion. Well our best estimates today are that our greenhouse gas programs are going to far exceed that $2.2 billion price tag. And so we will do our fair share but we will not be able to come up with all the funding. So that's why this program and the opportunities it presents are very, very exciting to us. Next slide, please.

Some of the projects that we have talked with staff about include the following. The super-ultra-low-carbon, our Clean Trucks, electric

trucks. As Christopher indicated we are in a second generation of R&D. That's an area that we believe can go much farther and provide some real opportunities here. We have short-range hauls, drays that these trucks can be adapted to that we think will help us immensely. And hopefully some technology advances will be able to take them beyond the more local areas, including out to the farther railyard.

Within our terminals we have cargo-handling equipment that can be electrified. We are looking at electrifying rubber tire gantry cranes, which are the ones that pick up containers from above. Those, again, that is an exciting opportunity. Many of those are powered by conventional diesel and that is a back-down from diesel to zero in terms of emissions and all the associated problems associated with that.

Shorepower is a big one. Shorepower is a huge investment. The two ports are investing over $400 million right now. We expect that to be an even greater number as we get into it. We found one of our projects that worked on a liquid bulk terminal, which is particularly new and probably the first time in the world this has ever

been done, rose in cost from an initial cost of about five to six million dollars to close to $18 million. Huge costs associated with it. Mainly because as you get into a project you realize, particularly with regard to handling liquid bulk, you have got huge safety issues. And so those type of things are emerging and that's where we are finding that there's additional dollars that will be necessary.

Moving into the low-carbon area. The Clean Trucks Program. Again our goal is at least 50 percent if not greater alternative fuel trucks in the drayage fleet. LNG is certainly high on the list for supporting that. As Christopher indicated, in conjunction with Clean Energy we are building on port property at a very reduced rent rate a fueling station that will service the immediate area. But there is a need for more infrastructure throughout the region if we are going to have this be a viable alternative. So certainly this is an area where we think we can work very closely with the CEC.

Looking at alternative diesel fuels. We again believe there's promise here. It kind of ties in with our technology advancement. We

almost on a daily basis have proposals from people who have ideas. Some of them snake oil, some of them aren't. But we need to verify and help advance those that are promising into the marketplace. We again believe this is going to be very important.

Likewise renewable energy. With many of the electric vehicles that we are proposing, particularly for within terminal uses, we believe that the power to charge can be drawn from installations such as solar. Both ports are looking actively throughout the entire harbor districts for opportunities to match alternative electric vehicles with fueling sites that are powered by solar energy.

If we go in the water on our harbor craft. We are working with a group to develop an LNG-powered tug. We also have a hybrid tug that has just been rolled out. So we are excited about some of these creative ideas that have come out of the industry.

And it is because there have been some partnerships and funding provided. The ports have provided incentive funding or partnership funding so that we could encourage this. And it is

bringing people out of the woodwork with some really great ideas and actually some great technologies. So we think that that could be integrated into this strategic partnership.

Overall we think the Technology Advancement Program is absolutely essential. It very much aligns with your goals. There's a lot of good ideas out there. Under-funded folks that need help and we believe we can partner and help guide that.

We believe there is a strategic alliance benefit, that is us being very closely. It will align not only our goals but the goals of AB 118. We think they work very nicely together. And again the idea is we are shovel-ready.

Also the ports have had to look very closely at cost-effectiveness. We definitely are challenged because it is a delicate balance. You have a very, very vital industry here that generates jobs, it is important to the nation.

And you cannot put the entire burden on them if you expect to continue to generate jobs. Otherwise you are going to divert that cargo and push it somewhere else. And that is not good for California and I don't think it is good for the

nation.

So we believe that every one of our projects have to go through a cost-effectiveness screening. And we have done that and we will continue to do that. Our boards demand it and we think that we can bring that to the table working with the CEC.

We have projects that are really lined up. But particularly in our Technology Advancement Program we have a laundry list of projects that need to be funded. We are getting to those. As Christopher indicated, we are committing $3 million per year between the two ports, $15 million total these first five years. That really is great but it is a drop in the bucket to what we really need. And so we would believe that we can accelerate the implementation of some of these projects by additional funding coming through this partnership.

As we have already indicated the impacts of port operations are felt by our local communities here. That's what the driver was for our CAAP program. The ports are strategically sited and we are not likely to move this port into the middle of Malibu so we need to reduce the

disproportionate impact on the communities around the ports. And by working together we can do that. So we think again this will give us some excellent opportunities to reduce these impacts.

And as Christopher stated, we are an economic engine. We want to keep these ports viable, we want to keep these ports viable into the future as trade rebounds from this temporary downturn that we have. We want to be poised and ready to move the goods efficiently and move them in greater numbers. And so the jobs that that will generate will be in excess of what we currently have.

Looking at the two ports, five county region. As Christopher indicated, we have a huge impact. Somewhere in the neighborhood of about 700,000 to 800,000 jobs just in the five counties down here in Southern California. For one port about a million -- statewide 1.2 I think for the two ports combined. And nationally close to three million jobs direct and indirect. That's really important. That's today and we are looking for greater benefits into the future. So for all those reasons we think it's great. Next.

We have had some experience with

incentive programs. Again, you can benefit from our experience. We have had very good success with our various programs that have been started under the CAAP. Our vessel speed reduction programs, our fuel incentive programs, our other incentive programs to help our operators integrate clean technologies into their terminals. Again, shovel-ready. And we believe with additional funding we can bring more projects to the table.

Because we think it is valuable to have the Technology Advancement Program we believe in partnering with the CEC we could benefit by having membership on our advisory committee that governs and guides the programs that are funded under our Technology Advancement Program. So what we would propose is just that, CEC involvement on the Technology Advancement Program Advisory Committee, helping us decide what makes sense in terms of priorities for funding and how to move those forward.

It is also a good opportunity to get recognition, both for the ports and for the Energy Commission with regard to these programs. We have a very transparent process and we also have a very good mechanism to make the results known and

spread that information to the public. And we think that's good for all parties involved and we think that it would be a very large benefit to the CEC.

We have an obligation not only under our CAAP but under our respective city programs to report on an annual basis to our boards and to the citizens, how we are doing. And that transparency and that reporting of progress keeps everybody on track, it keeps everybody honest, and is also, again, it's a good mechanism or vehicle for exposing the successes of the program.

What we think the final benefits, and probably some of the most important are the reductions in terms of greenhouse gases and consumption. Just based on the projects that we can identify that we can actually do some quantification, and this is probably I would say a very conservative estimate, that we believe we can reduce 7.2 million gallons of petroleum consumption per year, about 61,500 tons of greenhouse gas per year. And of course the priority pollutants of NOx and diesel particulate will also be reduced.

So all in all I think the ports are

ready for this strategic alliance and partnership and with that I'll conclude my remarks. I would just like to submit to you our proposal for this strategic partnership and we will follow it up with additional hard copies for you. Thank you.

(Applause.)

MR. WARD: Thank you, Dr. Kanter. Our next presenter is Andy Douglas with the Kenworth Truck Company. Andy is the national sales manager in the specialty markets. Andy.

MR. DOUGLAS: Well good morning, everybody. I am going to present on behalf of the commercial truck industry. A little bit different viewpoint here. But I think the commercial truck industry has also responded and responded very quickly to meet the goals that have been outlined here. I am going to talk specifically about Kenworth Truck Company, whom I represent.

In terms of long-term technologies, yes. The answer to the question is yes, we are working on all of these things today. At Kenworth we have an R&D budget in excess of a billion dollars. So today what are we working on? Many things. We are working on alternative fuels, we are working on plug-in electrics. We are certainly working on

hydraulic hybrids and other technologies.

The things that you need to keep in mind in terms of commercial truck is that what you are seeing in the, in the automotive world does not always translate to the commercial truck world. Moving an automotive vehicle of two to three thousand pounds down the road is quite different from moving a vehicle of 80,000 pounds down the road. The technologies are not always linear. In some cases they are, in some cases they are not.

We have a proving ground up in the Washington State area where we are working on all of these technologies. But today what I would like to touch on very quickly is what is available today. What are the best available technologies that we can manufacture today, commercially ready, coming down our assembly lines to meet the needs of the ports as well as the state of California.

And then finally I am going to touch on the green collar jobs. Because I think a lot of these technologies represent good, green collar jobs for the state of California.

Let me touch on real quickly for those of you who don't know us, Kenworth is a division of PACCAR. We have been in business for over 80

years. We are Seattle-based.

We are the world's third largest commercial vehicle manufacturer. We make trucks anywhere from a Class 5 pick-up and delivery to heavy-duty trucks that you see here in the drayage applications, as well as off-road trucks that you will see in oil field applications.

You will recognize our brands, certainly here in the United States, as Kenworth and Peterbilt. But around the world we also go by the brands DAF and Leyland.

Our history has been one of innovation and leadership and we are continuing that trend in terms of our commitment towards green technologies. First and foremost we do build diesel trucks. That is a big part of what we do. And I think it is a great story that I want to remind everyone before we talk about some of the other technologies.

As we look at the 2007 Emissions Solution we had to accomplish a number of things. This emission platform is what we are seeing the ports adopt today. First and foremost, you introduced the use of low-sulfur diesel. Secondly, EGR, exhaust gas recirculation to

improve the overall emission platform. And thirdly and maybe most significantly, the addition of a particulate trap.

As we move towards 2010 our company as well as the whole industry is moving quite quickly to adapt to the 2010 emission platform. That will add SCR to the mix here to reach those emission levels. Overall here you see the goals as we reach towards 2010 to move the NOx levels down to .2 grams.

But I think the story we all have to keep in mind is if you look at it over the long-term from 1994 as we move to 2010, the overall emission platforms for the diesel engine will be improved by over 90 percent. But that is not good enough. What can we do today to reach some of the goals that you have adopted here, particularly when we talk about greenhouse gases.

We are doing a number of things at Kenworth. First and foremost, certainly SmartWay certification for a number of our trucks. How can we improve the overall efficiencies of the on-road fleet. Secondly, hybrid, and thirdly, alternative fuels, and namely natural gas.

I want to focus on LNG. Kenworth has

been involved here with the ports for over three years now. Ramping up our production capabilities along with the Westport Innovations technology to meet the demands of the ports of Los Angeles and Long Beach. And I would like to give you a quick overview of what that looks like today.

At this point Kenworth is the only OE to adopt the natural gas technology. We are currently installing the ISX-based platform at our plants. We began production of those trucks last year an we are now ramping production to meet the demands of the ports in 2009 and 2010.

If we look at 2008, over 150 LNG trucks were deployed to this area and primarily in the ports. Our primary application is focused certainly on drayage as well as municipalities but we are also seeing a call out for this technology throughout the country.

As we talk about new technologies what we are really talking about is diesel-based technologies and how can we improve upon it. Whether we are talking about hybrids or fuel cell technologies most of it is based on diesel technology.

The same is true with LNG. This is

really a diesel engine. What you see there is the Cummins 15 liter ISX engine. It is modified slightly. A separate engine control unit, injectors and tanks are necessary. But this is a diesel technology, a proven technology that happens to run on natural gas.

So what are the benefits to the port community? Certainly a reduction in diesel usage, 95 percent reduction to be exact. More importantly over 20 percent reduction in greenhouse gas, a third less NOx and this is a domestic fuel and I think that is an important point in today's world.

Also for the operators out there it's a lower cost fuel. Certainly lately we have seen a compression on fuel prices. But from an industry perspective we expect to see all fuel prices increase over the intermediate and long-term. And certainly natural gas has a cost advantage over the long run when compared to diesel or other fuels.

The benefits of this system are that it really operates, again, just like a diesel truck. You are getting the same horsepower, you are getting the same torque and you are getting the

same kind of fuel economy that the operators expect in terms of their drayage applications.

There is no diminishing of performance as a result of this technology, an important point. Because as we look at new technology oftentimes you are looking at offsets. Yes, you are benefiting perhaps air quality and what is coming out of the tailpipe but at what cost in terms of performance. In this case we are getting the best of both worlds. We are not only getting diesel-like performance but we are getting improved air quality and a lower cost fuel source. So it is a win-win-win for certainly the environment but also the operators who are using the equipment.

This is a quick photo of one of the first LNG trucks coming down our Renton, Washington production facility. There you see the engine which comes to us from Westport Innovations in Vancouver, BC. It is set on the chassis along with the tanks there. And as I mentioned, we spent all of 2008 ramping our production and we are now primed and ready to meet the demands of the port community this year and beyond.

Why LNG? Simply it's the best available

technology. Yes we are working on innovative new ideas. And maybe there are some good ones out there but they are down the road, they are several years out. What can we do today with the best available technology and that's natural gas.

Here you see a study that was commissioned by Westport and Clean Energy and CARB and the study was done by TIAX. And you see the well-to-wheels emissions and the reflection of the greenhouse gas benefits here of natural gas versus diesel trucks. This is on the 2007 emission platform looking at 2007 emission levels for both diesel as well as natural gas. So here you can see the benefits on the greenhouse gas side. So far and away this is the best technology that we have today. Let's go to the next slide.

Giving you little closer look. As we mentioned we are looking at goals of replacing up to half or more of the 16-odd thousand trucks operating in the ports today. Replacing those with natural gas and LNG technology.

So what does that mean? We looked at the overall emission platform profile over a seven year period, a typical first life of a truck, and what that means.

In terms of one truck we see a reduction of nitrous oxides of 3.6 tons. If we were to replace half the fleet of diesel trucks that would represent nearly 30,000 tons of nitrous oxides that would be reduced over that seven year life.

Greenhouse gas reductions, there you see it. One truck representing nearly 200 tons reduction in greenhouse gases. Or in the case of half the drayage fleet, in excess of 1.5 million tons of greenhouse gases. Certainly significant. It's available technology and it is available today.

Here is a list of some of the companies that have already adopted the technology and that are operating in and around the ports or in the Los Angeles area. Up there you'll see many familiar names.

As you drive across the ports, across the bridges today you may very well see many of these trucks operating out there. So it is exciting for me to drive down, you know, the 710 or out here to San Pedro and begin to see some of these trucks in operation. It's happening. We are very excited about the future and we are very committed to the ports and providing a natural gas

solution to their goals.

Real quickly I just wanted to touch on hybrid. Another technology that's available. Hybrids are commercially available. We are building those on our assembly lines. And they represent an opportunity of 30 to 50 percent improvement in fuel economy as well as reduction, an equivalent reduction in overall emission platform.

These trucks can come in many configurations. Certainly for us most notably is Coca-Cola who has taken in excess of 400 of these trucks and spread them throughout their operations in North America.

More notably in terms of port usage. This is a recent announcement of ours where we brought out a tractor. This begins to blur the line a little bit as we look at between a medium-duty truck and a heavy duty truck. This truck rates out at about 55,000 pounds and is certainly capable of doing some type of work here and in the ports.

So lastly but certainly no less important is what does it mean in terms of green job creation. Very important. We have looked at

this and we continue to look at what the availability is in terms of creating jobs here in the greater Los Angeles area. And we see a significant opportunity to create jobs.

And these are good paying jobs, not only -- You know, I call them green collar because that's kind of a general umbrella term but they are jobs that are not, you know, certainly white collar type of jobs, management, sales, administration, those typical type of jobs, but also good technical jobs.

Diesel technicians, if you are not aware, make a very good living. These are highly trained people and in very high demand. Those technicians are now being trained on natural gas through the Long Beach City College here locally. So they are taking their diesel technology background and then increasing their specialty with regard to natural gas maintenance on the trucks.

So based upon what we see, we feel that there's about 1,230 green collar jobs created for every 1,000 Kenworth LNG trucks put into service. What does that mean? Certainly there is one driver per truck but in addition to that there's

many other type of jobs including maintenance jobs, field service and support and other types of skilled positions.

From our point of view our plan is to do what we call final assembly here in California. And what that will mean is we bring trucks from one of our North American plants. We will conduct our final assembly process here. That may take upwards of 40 hours of labor here in the local area. At this point no, we don't plan to shift an entire production facility to Southern California, maybe longer term, but we will bring jobs here to the local area in a significant number. So I think you are going to see a nice return on your investment. Thank you very much.

(Applause.)

MR. WARD: Thank you, Andy. Next we have Robert Mejia, who is with the South Bay Workforce Investment Board and GREEN Workforce Coalition. He will talk to us about workforce training, which is a critical issue with our economic development aspect.

MR. MEJIA: Good morning. I would like to thank Mr. Ward and the California Energy Commission for giving us this opportunity to talk

about green workforce development.

Again, my name is Robert Mejia and I am manager of the South Bay Workforce Investment Board. We administer federal Workforce Investment Act employment training funds in a nine city area here in the South Bay. And that is basically Inglewood, Hawthorne, Lawndale, El Segundo, the beach cities, Gardena and Carson. I am going to talk about what we are doing in terms of green workforce development.

We basically put together about a year ago a group called, a voluntary group called California's GREEN Workforce Coalition. It was established last February. And we have got about 62, maybe it's 64 at this point, members. Most of the educational institutions in Los Angeles County are members of our coalition.

In fact the major workforce development institutions represented by the State of California are members of the coalition. They include the California Employment Development Department, all of the Workforce Investment Boards in Los Angeles County, just about every community college in LA County, the K-12 public education system, the UC system and the Cal State University

system. There are also a number of private companies as well as organized labor that are members and have participated in our meetings that we have pretty much held monthly over the last year.

The mission of our coalition is to serve as an alliance for the development of a skilled, green workforce and a sustainable future. Our goal is to prepare a green workforce that responds to industry demands and supports economic development and growth in our communities, in the region and in the state.

We took a stab at coming up with a working definition of a green workforce and I believe it is helpful. But we suggest that it really consists of two or more engaged in the useful and environmentally sustainable transformation of space, energy, effort, information, ideas or knowledge resulting in value.

Although California is only one of 50 states we do represent the world's eighth-largest economy. And just about one out of every ten people in the United States lives here and works here.

To put things in a little bit of context. And this really borrows from the book that was on the last, one of the last slides by Van Jones. And I love this quote because it really, it's simple but to me it is very powerful. But the United States represents approximately four percent of the world's population but we account for approximately a quarter of the greenhouse gases in the atmosphere.

So that basically means that roughly one out of every four carbon molecules created by human activity has our name on it. So global warming and its effects on the planet and the long-term the effects it will have on the planet's life support systems is creating a sense of urgency and momentum to take action.

Around the country, as we are here, public institutions want to do something to prepare and develop a workforce with the knowledge and abilities to fuel really essential economic transformation. Not only because of climate change but right now we have this very serious economic downturn that we need to deal with.

So we ask ourselves, where can federal workforce investments have the best, immediate and

long-term impacts in response to the skill needs of companies that are engaged in carbon reducing activities? Similarly, where should we make investments to address movement by new industries and companies toward more environmentally conscious, industrial processes, really as a response to a greater and growing understanding of the climate crisis, changing consumer preferences and concern for the environment.

What we do know is that there are existing industries employing traditional workers in tasks where the outcomes reduce consumption, waste and pollution while new and distinct green occupations are beginning to emerge.

As workforce developers, just within my own organization, but others who engage in job training, it is important that they understand what traditional jobs and occupations are, what traditional jobs and skill sets are being employed in a more sustainable manner, what I consider derivative jobs are that are focused exclusively on green activities, and the method to understand their differences.

These are some conceptual tools that we are using locally. But the first is what I call

green root occupations. And those are basically those requiring traditional knowledge skills and abilities that can be applied to achieve sustainable product or service outcomes. They contain knowledge skills and abilities that are also found in derivative occupations that support sustainable activities and objectives. They might omit some root KSAs or contain added KSAs. Examples include computer software engineers, environmental engineers or landscapers.

Green derivative occupations, another conceptual tool, are those with traditional KSAs and KSAs that have been added, mixed or eliminated to achieve sustainable product or service outcomes. Examples of these include deconstruction workers, solar sales reps or plumbers who work on solar water heating collectors.

Third conceptual tool. Green root skill sets. They are skill sets and corresponding knowledge and abilities for which local demand has been determined with respect to occupations needed for green activities. So what is showing up here on the screen is maybe a humble representation of the fact that green root occupations and green

derivatives share a common skill set base.

Guiding principles for green jobs. We struggled for quite a while to really understand what makes a job green. We felt that if we could understand that then really we would be able to apply something that would hold true across a number of different occupations to determine whether or not they are green.

But basically there are three guiding principles for us. What is made or provided contributes to the reduction or elimination of GHGs and other -- and/or other agents of environmental degradation.

In terms of processes, how a product or service is made or provided is environmentally sustainable.

And in terms of purpose, work functions and outcomes are intended to be environmentally respectful and lead to value. Green-ness or sustainable outcomes really should not be accidental. Next slide. Wow, that's fast.

Here is our local, applied definition of a green job. I'll give you just a few seconds to look at that.

Outcomes-based criteria for green jobs

training projects. As we move forward, as we receive funding to put together large-scale projects and systems to train people for green jobs, some of the questions that we are going to be asking are what will the net energy savings be as a result of the training project? What net reduction in your carbon footprint will result from the project? And is training needed because the skills, knowledge and ability required to achieve more sustainable outcomes are radically different than what exists now in the workforce, such that training is required?

And really those criteria are borrowed from a report that was put out by the Texas Workforce Commission that knows a little bit about petroleum and carbon. So kind of borrowing from that line of thinking we came up with some additional criteria for evaluating service occupations where the outcomes or the products tend to be intangible.

But we are going to be asking what are the primary sources consumption, waste or pollution associated with a particular service occupation, what mitigation measures are in place in the industry in general and with targeted

employers specifically. Do those companies have energy efficiency or sustainability plans. And how does what they do contribute to sustainable products, services or systems.

And the gentleman here who just gave his presentation gave I think the perfect model of exactly the kinds of information that we are going to be looking for. So I would like to talk to you after the presentation. Next slide.

The Texas Workforce Commission also suggested some additional business services that workforce and investment agencies can provide. And they include reexamining energy consumption and emissions of a company, looking at revising business strategies, a redesign of production and delivery processes, revision of work assignments or modification of community services and philanthropic efforts.

We have kind of developed some basically strategies that we are going to incorporate in the very near future to evaluate green education and training programs. One is going to be at green advisory panels where we will be tapping into the GREEN Workforce Coalition's industry intelligence group, which consists primarily of private sector

members, to help us evaluate courses and programs to make sure that they meet industry standards.

We are also going to be putting together a green employer certification program similar to the program that we have for certifying our one-stop career centers, which is based on the Malcolm Baldrige Quality Award system.

Locally, standards-based criteria for green jobs, education and training will be reflected in a green education and training provider directory that we are in the process of establishing. We have a green root demand occupation list and you will see I think just about all the jobs on that list on the next few slides here.

We will be incorporating outcomes-based criteria for green jobs training projects, very similar to what was just discussed on the previous slides as well as the green evaluation criteria for service occupations. And we will be using green jobs advisory panels to validate the quality of courses and programs.

This is -- The next three or four slides reflect about 52 different occupational titles. And those were taken from a larger list of about

120, 124 occupational titles that had pulled from seven different reports on green jobs put out by different organizations around the country. Basically we culled through those and came up with the ones that could remain on our own local list based on labor market demand in Los Angeles County.

These are traditional occupational titles but what we do know is that one, they do have demand in Los Angeles County. And two, they do include the basic skill sets that employers around the country that are engaged in sustainable activities need.

So one of our recommendations or perspectives is that we as workforce development institutions is we need to continue to provide the labor market, and really ultimately industry, the skill sets that are needed so that those skill sets can be transformed into greener versions.

There is an asterisk next to electricians. Can you go back on that one? There is an asterisk on electricians and HVAC mechanics and installers and that is basically because their particular growth rates are a little less than county average. But there are very strong

indications that, particularly with the stimulus money, that there is going to be at least a temporary spike in demand for people who know how to work in the solar area as well as with solar heating systems and what have you.

We recently joined the SCAG Clean Cities Coalition and the SCAG Clean Cities Coalition recently joined our workforce coalition so we have begun to work together. And they have identified some job areas that they believe will be in demand as a result of what's happening under AB 118.

AFV-certified tech and people who work on the infrastructure that the Commission is very much trying to help build out statewide. Automotive service techs and mechanics, cleaner-truck drivers, heavy- and tractor-trailer. And then of course transportation and storage and distribution managers. There may be some job demand for people working in that occupation that are kind of redeveloping their fleets, using more clean vehicles. And of course in order to design these systems you obviously are going to need software engineers and computer systems analysts among other kinds of folks.

The next three or four slides are

recommendations that we have put together, really based on what we felt that could be done right now by agencies like ours and others around the country. But the first thing is that we need, we need more current and relevant labor market information and economic data as it relates to green industry activity. And of course the federal and state government should at every opportunity promote recognition and incentive systems for exemplary green employers. Next slide.

We believe that local workforce development agencies should develop green demand occupation lists for their own labor markets. Guiding principles for green jobs. They should utilize outcomes-based criteria to evaluate programs as well as green-focused -- and provide green-focused employer services. They should also use green evaluation criteria for service occupations. And they should put together green jobs panels to evaluate projects. Next slide.

Further they may want to consider using or putting together and using green employer certification systems, developing green education and training provider directories. Provide

assistance with apprentice preparation wherever possible. And put green experts on their boards and advisory committees. Next slide.

For people who operate summer jobs or summer youth training programs we are recommending that they provide opportunities that give youth exposure to an experience in sustainability-oriented education, employment and community service activities. And then tie them to opportunities for year-round, year-round programming.

They should also facilitate access to secondary and post-secondary education that focuses on sustainability and green career pathways. In summary, the program operators should also facilitate private sector job opportunities with green employers. Next slide.

And other recommendations include providing training or education for incumbent workers and job seekers who have a desire and the propensity to work in green science, tech, engineering and mathematics, or STEM, green STEM-oriented careers. And we should -- I believe it might be a good idea to provide incentives for currently undeclared associate, bachelor and

advanced degree students to focus them into green STEM fields and careers.

Further, we should put together a national campaign to encourage and enable opportunities for green STEM education and careers in environmental technology fields. We should also provide support to high school and college-bound youth who plan to pursue a green STEM career. I really believe that that can be done very effectively with public and community-based partnerships around the country.

There are four dates up here; the first one is this week. But we will be meeting with our industry intelligence group members to get their feedback on exactly how to apply the outcomes-based criteria and green evaluation criteria for service occupations in the application that we, that we have that's open to education and training providers who want to send people to receive training that is funded under the Workforce Investment Act. We have got four dates for them to show up and we are going to pick their brains.

Then we will eventually in the next couple of months be submitting that to our board for consideration and adoption. We expect to have

those criteria reflected in our application by or before the end of the spring.

We really believe that if we can get that going in the next two to three months that by the summer we will have a pretty robust list of schools that are validated that provide training for, for green jobs here in Los Angeles County.

So just in summary: We need to reduce GHG emissions.

We need to develop new environmentally conscious technologies and a green workforce with the skills to wield them.

We need to develop quality, workforce education programs to develop our green workforce.

Instruction for green jobs must meet industry and government standards. Scalable and effective green workforce development requires public/private collaboration among a range of stakeholders locally and at the regional level.

We believe that volunteer workforce partnerships like California GREEN Workforce Coalition can serve as vehicles for such collaboration. The collaboration we will need to develop a green workforce for a sustainable future. Thank you very much.

(Applause.)

MR. WARD: Thank you, Robert. The next presenter we have is Bill Van Amburg; he is a senior vice president with CALSTART. And he is going to talk to us about some of the activities that CALSTART does in general but more specific to the port as well. Bill.

MR. VAN AMBURG: Thanks, Peter. I spoke briefly yesterday at South Coast and talked a little bit more broadly about some of the activities we are involved in but also our thoughts as AB 118 comes out. Today I would like to, as Peter mentioned, focus more specifically on some of the port opportunities. And the ports are tremendous partners, both for deployment and near-term need as well as for technology development and enhancing kind of the next wave of technology improvements that need to come on top of these first platforms we get out there. So next slide.

And one of the things I would like to say, CALSTART itself is a consortium. Our goal is to grow and support a clean, transportation technology industry. We have been doing that since 1992.

But really building on what Andy was

talking about, there is a tremendous need and opportunity right now to really see these first technologies that are now in production by the manufacturers who are bringing natural gas, hybrid technologies and others to the market now.

If we want the next generation of improvements in those platforms we need to help them sell what they have got now. Get it on the road. Keep their manufacturing lines going so that they can afford to continue their investments for the next wave of technology enhancements we want to see.

So I can't stress that too much. And while that seems to be very focused very much on the near-term I think CALSTART was very involved in the creation of AB 118. It came out of a recommendation of one of our blue ribbon panels. We helped sponsor it with Speaker Nu¤ez in the past. And certainly one of the key goals of AB 118 among other things was to start turning the needle around on petroleum reduction and carbon reduction as well as maintaining if not improving criteria emissions. So we really need to keep our eye on that prize.

But part of that prize is really looking

at those technologies. And I really do commend the staff. The Energy Commission staff has, I think, done a fantastic job of juggling a very complex situation of looking for those things that get us in the strike zone for where transportation needs to be. We really can't afford to fund things that only take us down one or two paths. We need to find things that get us within the air quality, climate change and energy security strike zone. And those are the things that will give the most value and will use the state funds most wisely and will leverage funds most wisely.

So with just some quick observations that we would want to share and then kind of look at some port opportunities that we see from some of the work we have done with our port partners. Again, I think staff has done a fantastic job laying out a framework that makes sense. It has a rubric and metrics to it and shows the intentions.

I do think that we really want to stress timely implementation and near term successes. And Peter was mentioning, nobody knows where budgets go these days. We are in difficulties. I don't think the program can afford not showing good, near-term, solid successes back to the

Legislature, particularly as you can show real improvements, rubber on the road and impacts.

A balanced approach. And I think the staff, again, has done a very good job with laying out a balanced approach. CALSTART fully supports both looking at medium, near-term, long-term in a portfolio approach as well as multiple technologies and fuels. There is no one answer, there is no silver bullet. We really need to spread our investments across those things that get within the strike zone that I mentioned.

We also feel that the things that make the most sense now, that get us in that strike zone, will build the bridge to not only solving 2020 but getting us toward 2050. I don't think most of us are smart enough to figure out what is the absolute 2050 solution today. But we need to start changing the course of the ship rapidly on climate change gases in particular and then start building on those solutions and finding those things that actually have pathways and make sense.

Encouraging innovation I think is incredibly important. I think the staff has set out some broad categories where they would like to see improvement or activity but really allowing

industry or fleet users, partners, to come up with innovative ways of achieving the ultimate goals is really what I think the Energy Commission needs to be very open to.

And then maintain for themselves flexibility. It's great to lay out kind of, this is kind of how we see where the dollars could go. But you shouldn't pin yourself to absolute dollars in absolute categories if you get a lot of very tremendous ideas that maybe cross those boundaries. So that would be some of our observations on a way to approach what I think has been great staff work to date.

Now in terms of the ports. Clearly there is a huge opportunity here. The ports of Long Beach and Los Angeles have really stepped up above ports worldwide in taking ownership over a situation they don't fully control. But then trying to drive solutions, both on the marine side, on the vessel side, which is such a huge source of the emissions, and then both the land side, non-road and roadside of where so many of the other emissions that are contained within the port come from.

We have been working with ports. They

are members of our organization as well as we do direct consulting work with them on projects. And some of the interesting work that has come out of it. We did some work first on LNG yard hostlers. Taking the LNG fuel and engine, using it in a non-road vehicle in a different kind of duty cycle than drayage, which is really kind of moving cargo containers around the ports. It's a very difficult duty cycle.

And now taking another look at this with a new technology using hybrid in this application. So we will have three of these out. We think this is another one of those areas of a very good demonstration that can lead in a couple of years hopefully to actual implementation, deployments.

We see a lot of opportunities for enhancing this, certainly in the technology development area, where you can add the ability to do start/stop, engine off, move the vehicle forward slowly without having to restart the engine. There's a lot of opportunities here.

Just very similarly as Andy was pointing out, there has been such a breakthrough now in hybrid technology. Moving kind of from the straight truck environment in a medium-duty work

truck type of application now into tractors, both for beverage and kind of a regional heavy haul. And now starting to push the boundaries. A couple of manufacturers are moving into the far ends of the Class 8 hybrid long-haul truck.

We certainly see applications around the port very specifically for hybrid drayage. And within the region, the South Coast region, hybrid heavy haul. Not line haul going cross-country necessary but these Class 8 trucks carrying heavy cargo within the region.

We think this is a great opportunity right now. In fact we have a working group in this, a Class 8 working group. Both ports are involved in it. We hope to do a fairly sizable demonstration of these technologies that will lead to kind of defining what is the best application and duty cycle to put technologies in for a full-blown deployment.

And we mentioned this, I won't spend too much time, but this is another breakthrough area where stored energy aboard vehicles can really start to lead to shutting off other diesel engines such as in refrigeration units and other things. But particularly in port equipment off-road we are

also seeing this opportunity.

And I think down the road one of the things we are also looking at is this blending of the natural gas technology and alt fuel, biofuels with hybrid technology or efficiency with the fuel coming together. That's a huge nexus and we think it is an opportunity to demonstrate at the ports and achieve the AB 118 goals.

Now I show this simply because we are starting to see some non-road advance technology. In this case this is a wheel loader hybrid from Volvo that is coming out later this year.

And going to the next slide. We have a construction equipment forum that has now launched and there is a huge overlap between construction equipment and cargo handling equipment here at the ports. A lot of the same duty cycles. Sometimes the actual same equipment, sometimes just a small variant of the equipment.

This is a tremendous area both because of the pressure to reduce emissions and align with on-road emissions over the next few years but the great need to reduce fuel use. So this is an opportunity. In fact Steve Sokolsky from our team is here, he leads this effort.

Our first forum will actually be kicking off March 16 in Long Beach at the Clean Heavy-Duty Vehicle Conference. But this is another area that outlines I think some tremendous opportunities to take new technology into the non-road and cargo handling area.

Real busy chart, don't try and read it. But I laid this out as kind of a thought piece for a port conference I attended last summer. And the whole point of this is to show that there are pathways for today's technologies as they start to move in, where with enhancements, with different fuel blends.

For instance in natural gas, once you start building out that infrastructure, blending biomethane or renewable natural gas can further reduce the carbon footprint of that vehicle with no change to the vehicle or the infrastructure that is involved. Eventually hydrogen blending could be another pathway there.

Similarly with hybrid technologies. As you start to roll that out it allows you to do new things. With electrified or advanced components you can start shutting the engine down. You can move the vehicle in a line without starting the

engine. You can really aid idle reduction.

So these things become the enabling platforms that move towards 2020 and beyond to 2050. And that's kind of the vision that I think we should keep in our mind as we are looking at both near-term results and building the bridge for the long-term changes we need to cause.

Now the reason I say keep our eye on the prize. This just came out over the weekend in the Washington Post. That climate change, as several studies have recently shown, is moving at a faster pace than even the experts predicted just a few years ago. A variety of reasons for that. There is an increase in human-caused emissions. There are some natural feedback mechanisms such as permafrost melting faster, releasing more carbon and GHGs. And our natural systems are not absorbing carbon as much as we thought they would. The net result is we can't delay and we can't only invest in technologies that will help us in 2050. We need to invest in things that start to help us now.

But we have a huge opportunity as well to tremendously leverage the state funds, the port funds right now with almost an embarrassment of

riches into the transportation sector from the stimulus bill. Now these numbers have changed a little bit in what came out of the final bill. In fact it is still hard to read the final bill with all the markups that's in it.

But it is on the order of more than a billion dollars in various forms going to transportation. Much of it to implementation dollars. And clearly there would be a huge opportunity to match port dollars, state dollars and federal dollars for both implementation and demonstration projects in and around the port. It is a huge opportunity. And I know that South Coast, the ports and others are looking at this now.

So just kind of a framework as we look at this. Certainly because these technologies are on the cusp of market and moving the first few thousands into actual use, getting them into customer hands and off the production lines, will actually tremendously impact the incremental cost by getting to the next, kind of if you will, plateau of volume.

We really support the hybrid and high-efficiency trucks, speeding implementation, as

well as investing in some of the enhanced technologies for going down the road enabling our next steps towards 2050. Certainly zero, near-zero and low-carbon transit and other vehicles. High-efficiency natural gas trucks and engines is a huge area that's really important, both for implementation and deployment as well as for investment in the next generation of engines.

Waste-to-fuel demonstrations, low-carbon retail stations. Getting the refueling network out there for alt and biofuels, tremendously important. We think there's even an opportunity for some super-ultra-low-carbon technologies, school buses and other things that are already -- plug-in for instance could be part of that.

And then assistance with verification and certification.

So these are just some thoughts. They very much align with where we see opportunities in the port environment, certainly in Southern California and in the state, and ways to tremendously take advantage of the stimulus money that is out there that is on the same timing track. We need to partner quickly but I think the timing is real opportune. Thank you.

(Applause.)

MR. WARD: Thank you, Bill. Last but certainly not least of the presenters we have is our friend Paul Wuebben. He is the clean air officer at the South Coast Air Quality Management District. Listen carefully, Paul has a lot of good things to tell us today.

MR. WUEBBEN: Which means I am going to say thanks for a great job, Peter and Tim.

(Laughter.)

MR. WUEBBEN: Anyway, I really appreciate the opportunity. First I really want to also say thank you to Dr. Kanter and Dr. Christensen for hosting the meeting. And more importantly, for really being the tremendous focal points that they are in those organizations for the CAAP and all the collaborative efforts that have come out of that effort. So that's a great basis, I think.

The other thing I think I just want to say in starting is that we really are at ground zero for addressing air quality in California, not just Southern California. I think that it is not an exaggeration to say that the lungs of this particular locale really serve as the lungs of

America in a very disproportionate way when you are talking about 40 percent of the entire goods are moving through this portal.

Furthermore, our most recent information out of our multiple air toxics exposure study, the third generation of that work, identified that while in the South Coast air basin generally we are seeing a reduction in toxic emissions and exposures, that in the areas surrounding goods movement, particularly in the ports, unfortunately we are seeing an increase in the, in the concentration and risk factors.

And of course one of the important milestone findings about the study is that 85 percent of that exposure is related to diesel and the carcinogens in gasoline exhaust. But 70 percent of that total is just from diesel. So we have got a lot to do. Next slide, please.

First I want to just identify that we are in strong agreement with what the Energy Commission has developed in their, in their plan. The focus on low-carbon technologies is a crucial one. We would just suggest going forward that in certain categories, as perhaps the ultra-low-carbon categories become available, if they mature

faster than anticipated, that they consider changing some of those fund distributions.

In terms of comments, specifically. We think that it is very appropriate that we look at the multiple benefits, not just greenhouse gas emissions. Southern California represents 25 percent of the nation's ozone exposure. Just in this air basin alone we are 50 percent of the PM10 exposure. So that represents I think a lot of win-win opportunities for reducing not just greenhouse gases but petroleum dependance through alternative fuels and criteria and toxic emissions.

We think that there are certainly synergies that are crucial in looking at natural gas as a bridge fuel and it has important benefits in its own right. You can look at that as essentially building literacy to perhaps some more longer-term fuels like hydrogen. And that's why I think that the slide that Bill showed regarding pathways is extremely germane.

On the infrastructure. I think it is clear that that is perhaps among the hardest elements to build on a sustainable business, a sustaining basis. It's difficult to rationalize

that in difficult economic environments even. And so just paying attention that that has some special needs.

And then the last area would be looking at the plan from a balance standpoint. We would suggest that we not look at the formulas that are indicated in too much of a fixed sense but that they are evolving. That each of the fuel needs, each pathway needs some careful feeding, if you will, and that they are all constrained, unfortunately, by low oil prices, ironically.

The current recessionary environment I think gives a special impetus to trying to expedite the administration of the funds and to recognize that there's a lot of near-term opportunities. The OEMs as we just learned yesterday, unfortunately, need additional synergies to help foster their plug-in hybrid and other alternative fuel and greenhouse reduction technologies.

There's school district needs. The Low-Carbon Fuel Standard clearly needs support for development of biofuels. A 1B funding moratorium puts a greater stress on all of that. In fact I might want to add just parenthetically that our

district board just this last December, just a couple of months ago, decided to augment natural gas funding for some demonstrations in lieu of the availability of that prop fund, Prop 1B moratorium. So we are hoping that that can be removed as well. So I think there is leveraging that is crucial in this environment.

Thinking about kind of the specifics I guess on the Investment Plan. The ranking system we think is certainly an excellent first step and it will certainly evolve over time. It is very difficult, as we know, to get accurate data on these well-to-wheel judgements and so perhaps some emphasis on getting that kind of data in part of the training that is identified.

Some other areas I think are that the timing on these very long-term pathways is inherently speculative. And while we want to push that we would suggest that there is probably a need for some flexibility in looking at these categories of low-carb and ultra-low, super-ultra-low and even the fuel economy. That there is certainly an overlap within those categories to some degree. Thank you.

Now I want to turn briefly to some

specific programs. And I won't spend a lot of time on this, certainly on this slide. But we have developed just recently our technology plan that identifies the key priorities. And what we would observe as generally and very specifically there is that that plan aligns very well with the Investment Plan. So there's a lot of opportunities for specific technologies. In the next slide I'll get into more of the details.

Specifically what we are hoping to see going forward is a range of project activities that would allow us and the Energy Commission to leverage each other's funds. We are planning to place some $4 million in the low-carbon technology categories that involve heavy-duty natural gas incentives. I notice that they mentioned the receptivity to the role of rebates.

We want to look at natural gas conversions and OEM additional products that enhance additional engine development. And we are especially pleased to see the very active leadership of Kenworth and Cummins Westport and others. We do think it is valuable, by the way, to augment that competitive playing field but also recognizing that they were the first on the market

and hopefully there is a first leader advantage going forward.

In the super-ultra-low category area we are proposing to bring to the table some $9 million. We would hope to leverage that with up to $19 million on the CEC's standpoint. And that would involve a whole series of plug-in hybrid, light-duty, medium-duty and heavy-duty applications. And certainly in the medium and heavy we would hope to find synergies in the port with respect to that.

And then even in the super-ultra-low-carbon categories. As far as hydrogen we do think that there is a need to focus on high-use, high-efficiency through-put stations. Multiple use and some transit demos are possible there. And looking for a total project funding of perhaps $12 million, of which we put in $4 million. In addition we would like to explore some hydraulic projects. And I'll get into more of that in detail. Thank you.

Specifically in terms of heavy-duty gas engine development. We certainly want to build on the developments that went into the ISL-G and recognizing that the other, maturing HDPI

technologies are coming forward. We would like to in the short-term put $3 million towards that and would invite some co-sponsorship with the CEC in additional engine development.

With respect to truck applications. We are hoping to devote up to $18 million in the short term. This would look at pre-2003 heavy-duty trucks. Perhaps some LNG where there would be port and non-port applications. We would hope to target perhaps as many as 200 older vehicles in that and provide perhaps $90,000 per vehicle as an increment. We would certainly welcome comments on any of these specific benchmarks.

Moving to the area of hydraulic hybrids. And my friend Bill points out very correctly that we should be thinking of not just hydraulics but the wider universe of all hybrid electric options there. But we are certainly very focused on the opportunities in medium- and heavy-duty vehicles for energy efficiency gain so we would suggest $6 million that we would bring to co-sponsor a range of activities.

One would be in identifying the specific niches where they may be most competitive to conduct some demonstrations of either parallel

systems or series systems, recognizing that that architecture is somewhat complex and there's still some degree of optimization and perhaps even blending of those two technologies. And then even looking at integrating that and optimizing it for advanced engine type designs such as homogenous charge, CI-type engines.

This is just to address the important role that we see transit buses continuing to play, representing an important platform really for innovation. I think we should all give real recognition to people like LA MTA, Orange County Transit, Long Beach Transit, et cetera. All these transit districts, especially in Southern California, have had tremendous success in getting the natural gas technology developed.

We think additional efforts in that vein are important looking forward at fuel cell vehicles that look at more agile and more flexible technologies. Some that would look at batteries that are quick chargeable, those which would have some plug-in fuel cell type hybridization, perhaps even hydrogen CNG blends as well. So we want to put up to $4 million toward that task and see CEC support on that.

In the school bus arena, quickly. We are talking here about placing perhaps $14 million aside to devote to up to 100 bus replacements with about 140,000 per bus.

Then just finally turning to the area of infrastructure relative to natural gas and hydrogen. We would be looking at an overall program commitment from both sides of about $15 million. Of which, as you can see in this allocation, that would be distributed to a variety of infrastructure.

Some that would look at blending of hydrogen and CNG perhaps, waste-to-pipeline biomethane. I'm glad to see that that was referenced several times here. Refuse-derived methane, some CHP or closed energy hybridization, waste to hydrogen to energy type facilities. And also some higher pressure applications.

So finally I just want to point out, as I am sure the CEC appreciates, the South Coast District has had a long history at working on a variety of deployment and technology events and projects. Over the years we have spent probably close to over $400 million, I believe, and leveraged that about four-to-one. Just in the

school bus arena, for example, we have brought forward about $102 million. We targeted 4,000 engines during that period. We have got a budget now of $56 million essentially on the deployment/ incentive side for SB 1107 and AB 923 funds.

So all of that gives us I think an important opportunity to channel investment in Southern California in a cost-effective manner in terms of our best practices, experience and learning that we have done in terms of leveraging. But I know that the CEC has done a lot and we have learned a lot from their success as well. So we are looking forward to the partnership and thanks very much for the opportunity.

(Applause.)

MR. WARD: Before we go into our public comment I hope you will join me in giving these folks a round of applause. I think this is an excellent panel and I know I have learned a lot. I appreciate all your time you spent preparing those.

I think we'll look to quickly go to the public comment section of this. This is one of the main reasons we are here is to elicit public comment, stakeholder comment. We have run a

little longer than we expected. We were hoping to start this around 11 but we can start now. And I am going with the blue cards in the order I received them. Bill Walles from PTDC/HAIC. And after him will be Christopher Perkins.

MR. WALLES: Good morning. Just by way of self-introduction, I am Bill Walles, a partner in Technoplex Group. And my comments are as a private citizen. But I am a member of the Harbor Association of Industry and Commerce, I am the secretary/treasurer. Also a member of the San Pedro and Wilmington Chambers of Commerce.

I wanted to speak in strong support of what the CEC is doing in its Investment Plan. It looks like a massive amount of great work.

I also wanted to reinforce my support for the potential strategic partnership between the CEC and the ports of Los Angeles and Long Beach. I think you will find, having been in the San Pedro Bay area here, that the ports are unique in my opinion in that they have some demonstrated leadership and competence in the area of emissions reduction and working with industry and their tenants.

I did want to bring to your attention an

emerging entity, it's a 501(c)(3), the San Pedro Bay Port Technologies Development Center. I didn't realize I could give you a PowerPoint but I will leave a hard copy here.

The San Pedro Bay Port Technology Development Center is an effort of the San Pedro Chamber of Commerce, the Wilmington Chamber of Commerce, the Port of Los Angeles and the industrial community. The intent is to establish a technology business complex focused on the green technologies and innovations needed by the maritime industries in their efforts to meet air quality, energy efficiency and security requirements.

I believe it represents a good opportunity for the CEC in that we work very closely for economic development and job creation, particularly around clean and green technologies. We have a three-step method. We identify the technology needs, we do a global search for the companies, and we attract and grow those business here in the San Pedro Bay. So it is very, very focused on that area.

We have had a lot of good interaction with Senator Boxer, Senator Feinstein,

Congresswoman Harman, Council Member Janice Hahn, Mayor Villaraigosa so we have established some starting funding. We have matching funding from industry. And so my main message would be, we are a great receptacle for decimal dust in your program. Rounding errors are well appreciated and would have a massive multiplier effect.

We are in the process of our founding partner fundraising, which is going on right now. We have received a commitment from the Port of Los Angeles for the establishment of a 501(c)(3) and we are currently raising funds from the harbor area interested companies.

We have been essentially a volunteer organization through the Chambers of Commerce. We started about a year ago January and are now at launch. Specifically our funds are used for research, staffing and leases and outreach to existing technology companies, emerging technology sources, funding sources and the government and the public.

One other component that I think would be of interest given the Commissioner comments is one other unique aspect of this area is the Port of Los Angeles High School. I urge you to walk by

on your way out; it is next door to the port building here. And that's a high school focused on the port and maritime industry and might be a good complement to the K to 12 outreach. The Port Technology Development Center likes to do some of those things as well because we are all one community. Thank you.

(Applause.)

MR. WARD: Thank you, Bill. Thanks for taking the time to join us today.

Next, Christopher Perkins with Unimodal.

MR. PERKINS: Hello, my name is Christopher Perkins. I am with Unimodal Systems; I am the CEO.

We are developing a personal rapid transit technology known as SkyTran. You may have heard from our colleague up in San Jose, Robert Bartsch, who touched on some of the technical aspects of how our technology could serve the goals of the AB 118 program.

Now one of the key elements of our system is that we are an automated electric guideway network. One of the key factors of how we can improve public transportation is that instead of people moving in groups on let's say

buses or light rail, we provide an individual vehicle that moves on an electric guideway. It is a highly efficient, energy efficient approach to this.

And because of this personal rapid transit architecture where you have one vehicle, on destination, it provides nonstop movement of people, reduces congestion, and you have a highly efficient, energy drive train that gets up to 500 miles per gallon.

Now this, I put this in here to show how this PRT architecture is very much like the interstate system where instead of having to stop like a train or a bus does on a road to pick people up at a scheduled stop, in our system you board at an off-line station. And so the vehicle gets on and off the main guideway, much as you get on and off an offramp on a freeway.

We have put together a number of key collaborators here in the state, the NASA Ames Research Center. We have a United States Department of Transportation research in innovation grant at the University of Montana, which we have made excellent progress in showing successful demonstration of our maglev linear

synchronous motor system. And we also are working with the University of California on software development and simulation of how these systems would work.

We are also in the process now at the NASA Ames Research Center of installing our first prototype vehicle, which we will take delivery of at the end of this month where we will also be putting in a guideway in Building 14, with the eventual expansion of the project onto Moffett Field. And it being a project where we would hope to get the support of the CEC and the 118 program to demonstrate how this technology could work. Where we integrate the maglev and our linear motor with the vehicle and the guideway system to show how we can achieve what we think are some substantial benefits to the goals of AB 118 and this process of coming up with greenhouse gas emission reducing technologies.

We have also put together a number of key strategic partners, which I hope we will hear from today. Jenkins/Gales and Martinez, they are a major infrastructure project management firm, which we see as being a very important partner in moving from demonstration to commercial phases of

our technology.

One-Cycle Control. They have developed some highly efficient advanced power electronics, which aid in the motor and propulsion systems.

And Advanced Digital Manufacturing, which is the developer of our vehicle.

Now we see that what we are doing advances the CEC goals in that we emulate cars. And we think that that's a very important attribute from a consumer preference point of view when people are thinking about public transit as opposed to using their cars. So if you make public transit more like an automobile in terms of its characteristics, on-demand, point-to-point convenience, that we can reduce VMT by getting people out of their cars. That's number one.

We are also I think consistent with the ARB's ETAAC committee's findings that the possibilities of PRT have great potential as getting people out of their cars and making impacts in transportation with a system like our's has high possibilities of reducing GHGs and congestion. So we can go after two major problems that are bedeviling California cities.

Also our system's low cost and small

footprint can accelerate transit-oriented development and also reduce VMT.

But it also I think will provide an opportunity for the expansion of public transit out of the realm of just simply being something that government provides and subsidizes to a vibrant business which could be the business for actually California's global competitiveness in this new PRT industry.

Also I think our innovative technology fills a crucial gap in the CEC's electric drive technology. We would really like to bring our technology to the attention of the CEC and get their support so that we can demonstrate how these benefits that we have discussed can be implemented in a quick move from demonstration to commercialization in the state.

Finally, it encourages the creation of markets to improve consumer choice when it comes to public transportation. Currently we have got only one realistic alternative in the marketplace when you really want to get around and that's the automobile. We see that there is a third path beyond just cars and public transit as we know it now and that is with this concept of PRT.

We are leveraging existing US DOT funding that we currently have and we have made great strides on. But what we see as a next step is an integrated demonstration system here in California at NASA.

And we are working with cities across the state. It should be noted that a number of cities, the city of Santa Cruz, the city of San Jose and Marin County have all started active processes to bring PRT to their cities.

We see our technology as California-based. And we in fact have in many's estimation the most advanced PRT system due to our maglev system that eliminates wheels and increases maintenance and lowers costs. And we have an opportunity to bring a new industry to California that brings high-tech jobs in manufacturing.

And I think finally it should be noted there's been quite a bit of development in this area of PRT or personal rapid transit worldwide. South Korea has a system that is being supported by POSCO Steel, which is among the world's largest steel companies. It is called the Vectus system. It has been installed in Sweden.

Just in Time magazine this week, Abu

Dhabi, which is developing a sustainable city known as Masdar, is moving to install a PRT system. In fact one of our competitors, the ToGetThere system from the Netherlands. In fact we were involved in this process to bring our technology. The fact was that though we have a more advanced technology that we believe is well-suited for this project we had not come along far enough in the demonstration of our technology to attract this contract.

So we see that from the point of view of competitiveness and for the United States and California to participate in this new, emerging global industry, that it is very important right now, in fact crucial, that we gain the support of the state in advancing the goals of demonstration. Thank you very much.

(Applause.)

MR. WARD: Thank you, Christopher. I note that the next card I have is also from Unimodal.

MR. PERKINS: Yes. And we -- Yes.

MR. PERKINS: Can we, can we have just one from each entity? We have quite a few folks to get through here.

MR. PERKINS: Okay. Well we have actually people supporting our effort. You know, from different companies that are working with us.

MR. WARD: I guess I'm -- If it is all supporting the same, the same concept I would really like to move on to get a wider, a wider band if we can of public support. And if we can hold it to the end and if we still have time.

MR. PERKINS: Okay, that's fine. That's fine.

MR. WARD: I think that the writing is similar. Greg -- I can't read it. Greg from OCC.

DR. SMEDLEY: I'm Greg Smedley from One-Cycle Control, Incorporated. I am hear also to talk to you a little bit about SkyTran. And in fact the power electronics that enable the SkyTran system.

MR. WARD: Well, I wasn't aware. I see the writing is very similar. Can we hold this and get --

MR. PERKINS: Okay. We have One-Cycle and ADM and Jenkins/Gales and Martinez are all here in support of our effort.

MR. WARD: Okay. I'm wondering, could we hold that to the end so we can work through

some of the other commentors. I'm sorry.

DR. SMEDLEY: Thank you. I'll look forward to sharing some power electronics with you.

MR. WARD: Okay, thanks. Enid Joffe, Clean Fuel Connection.

MS. JOFFE: Good afternoon. I don't have a PowerPoint but I will be submitting written testimony.

I am going to talk about electric vehicle charging infrastructure, both for light-duty vehicles, hybrids and for medium- and heavy-duty vehicles. First of all I am the president of Clean Fuel Connection and we have been in the electric vehicle charging business for ten years, which in itself is an accomplishment. We were started under Edison International and I have been doing EV infrastructure really since about 1996.

We have sold and installed 7500 chargers and we are still trying to maintain the infrastructure that is currently out there, which is an increasingly difficult task given that it is very hard to get parts now and there are fewer and fewer cars. But that said, that infrastructure is a great resource for the future.

I also still drive an electric vehicle and have for the last six years so I speak as a consumer as well as somebody who is in the industry. And I feel like I should have a T-shirt that says, I survived the death of the electric car and I am still here to talk about it.

Today we see a new emerging industry and I am currently working with several companies. One of them Clipper Creek, who some of you may remember as EVI. I am working with them on the infrastructure for the BMW Mini-E program. Those cars are just about to come to 250 very lucky drivers in the next few months and that program is starting as soon as next week.

And I am also working with a company called Coulomb which has developed what I think is a very superior public charging station that I will talk a little bit about as well. And that is starting to come to market.

What I mainly want to talk about are some of the lessons learned from the past round of infrastructure and I think that we are in a very unique position to do that. I have thousands of records of customer installations and that is a very valuable source of data for these lessons

learned.

And in fact I'm just starting a project with Detroit Edison and University of Michigan and General Motors to mine that data and pull out some of the information. We are getting a lot of questions now about average charger installation costs, the behavior of drivers, whether public infrastructure is really necessary. A lot of those kinds of questions. So a lot of the data that I have is going to be very valuable and useful in answering some of those questions.

And I guess the few things that -- I would say the highlights are, number one, you don't often get to --

(Automated WebEx instructions were heard via the WebEx system.)

MS. JOFFE: Well, it stopped anyway. So I guess the first important thing is, the lesson learned is that we need to get out of the way of the car sales. I think one of the biggest issues in infrastructure in the 1990s was that, and still, it takes over 30 days to install a charger.

There's four or five different agencies involved from the utility to the car agency to the local jurisdiction having authority. That's a lot

of coordination and most of that has not changed in the last ten years. And if I had my druthers the car dealers would do what they do well, they would sell the cars. The car would come home with a 110 charger. And then you would allow the aftermarket to install the 220 and higher level chargers.

I think we also need ubiquitous public charging. Because there is this psychological condition that we all learn about when we become EV drivers called range anxiety. When I am driving a gas -- well I don't drive a gas car. But when I did drive a gas car, and I actually drive a natural gas car too, you don't have to think about where the next gas station is because you know in a couple of miles you'll find one.

You have to think really hard about where the next plug is, and also what's working and what's not working. And I think I have found the last 15 working charging stations in LA. I know exactly where they are. But you are constantly thinking about that and that changes your behavior.

I think we also need one standard. One of the things that hurt the industry in the past

was the fact that we had inductive and conductive. The industry is working on a new standard, J 1772. The connector for that is currently in UL listing. And I think that through your funding you have a real role to play in helping establish that standard. And let's make sure that when somebody pulls up to a charger they know that they can charge there.

And I think we need fast charging down the road. You know, I know there are issues and I'll address some of those around the interface between the time of use of public charging, which is usually daytime, and the needs of utilities for load management. But I think there are some other ways around that and I think we do need fast charging. And I am working with some folks who are developing the gas station of the future or a fuel station of the future and I see fast charging as very much a part of that.

One of the other issues is that I don't think that -- One of the things that I have learned is that chargers are not just for light-duty vehicles. I am currently working with a company called DUECO which has developed a plug-in hybrid electric boom truck. And one of their

frustrations has been the inability to get chargers developed and installed. And so I think that's another area that the hybrid technology is coming along very nicely but I think we also need to not forget the charging infrastructure.

Then in terms of some of the goals that I think the program, whatever the program that is developed needs to accomplish. One of them is we have got a lot of technologies coming along, as Bill Van Amburg mentioned, and a wide range of hybrid technologies.

But from the perspective of air quality we want to maximize the zero emission range. And I know as a driver, if I can pull up somewhere and plug in and I don't have to worry about, even if I am driving a hybrid I can still maximize when I want to as somebody doing something good for the environment. I can maximize my zero emission vehicle range. And I think that is a very important thing to do, even with the hybrid vehicles. Where you can go the distance when you need to but you can also drive zero emission in the city.

The other thing that we need to do is reduce on-peak demand and I think there are ways

to do that. We are developing a concept for a solar charge port. When we didn't have enough opportunity in the EV business we went into the solar business, which is a very compatible, related business.

And so now I see a way to blend the two. Of having modular charge ports, you know, structures over the charging stations just like they do in Santa Monica. At home we are installing our first home, solar patio cover. Those can be car parks as well. A lot of really good opportunities there.

And I think we need to broaden, and there is the opportunity to broaden from homeowners and businesses to apartments and condominiums. We were very limited in what we could do before. And one of the things that the new technologies, particularly the one developed by Coulomb allows us to do, is put the chargers in guest parking and people who use it pay as they go. So we will no longer have to screen out people who live in condo associations. And I spent some very frustrating months trying to get permission and approvals for a condo association installations, only to have them frustrated down

the road.

So in terms of the recommendations. And again, I will put all this in written testimony. Number one, I think we need, we should start with the infrastructure that we have. There's about 700 charging stations out there now, not all of them functional. But we always told the customers that the wiring was still there, it was still good. And as far as I know that is still true. So basically those boxes can be renewed. The new chargers meet the same, have the same wiring requirements and new boxes can be installed at a very reasonable cost. And I think that would be a great way to jump-start the infrastructure that we need.

And I think we need to have differential rewards for charging stations that are utility-friendly. We do not want to add to on-peak charging. And there are ways to do that with pricing signals, there's ways to do that with solar. You can do backup battery generation. There's lots of ways to do it. But I think that should be an emphasis and let's solve this problem about charging contributing to peak demand.

I also think it an important thing that

the Energy Commission can reward is the development of local ordinances. And we already have a LEED criteria but it is not very well publicized. But local ordinances and requirements for new construction.

I just visited a site in Westwood yesterday and basically the building owner said, you know, those chargers are standing between me and my occupancy permit so put them in. So those are things, you know, that they can be environmental, that's great, but if they are required to do it they are going to do it and that helps the industry.

And then finally I think we need to work with the utilities. There's a lot of interaction. The utilities are obviously very concerned. And I am having a new experience now with BMW working with the East Coast utilities. By comparison the West Coast utilities have this totally nailed down. The East Coast utilities are still saying, why do I want to support an electric car. So there's a lot of work that we have to do on the East Coast. Our relationship with Edison and PG&E and San Diego Gas and Electric and the munis has been very cooperative but we also need to

understand their needs.

So that said, you know, we have, we have, we still have an infrastructure out there. We have a great starting point for building up the infrastructure. I think we can really get a jump-start and I am looking forward to the program being supportive of that. Thank you.

(Applause.)

MR. WARD: Thank you, Enid. Next we have Mike Lewis with Pearson Fuels. Hello, Mike.

MR. LEWIS: Good morning. How are you?

MR. WARD: Good.

MR. LEWIS: Good. I just have one question and then a very short comment. In the Investment Plan it mentions a few different times the solicitations to manage co-funding. So I think that means that there will be a solicitation put out and then someone will be granted the money to then reissue it. Is that what that means? Maybe help define for me what it means if that's okay. I see it a lot in here.

MR. OLSON: Do you have a better reference to that in the document?

MR. LEWIS: Yes, page 33.

MR. OLSON: And what was that, what

section is that? I'm just curious.

MR. LEWIS: Hydrogen from renewable sources. It says the program's suggestion is one solicitation to manage co-funding of hydrogen and other alternative and renewable fuel stations. And it is in several different places, that phrase.

MR. OLSON: I think the reference there might be, is that we might have on infrastructure solicitation. Underneath that there might be individual hydrogen, natural gas, electric charge. We are looking at a way of how to, how to make our workload more efficient. Instead of having 40 different solicitations can we do -- and half of them are infrastructure, could we combine from an administrative standpoint, the ability to manage that. And there are examples where there are other agencies that could help us manage that. That probably is what that reference is to. And it's pretty vague and may have changed a couple of times since we wrote that.

MR. WARD: And I think it has to do with the partnerships we are trying to strike with other agencies and local agencies as well so our money can be leveraged.

MR. LEWIS: Right.

MR. WARD: So I think that's where the co-management part comes in possibly.

MR. LEWIS: Right, okay. And I thought it meant it something like that, I just wanted to clarify. I have some experience building alternative fuel stations and I am a one-song show. I talk about one issue that comes up. I appreciate Peter's comments about incentivizing something and then bumping up against the barriers. Because I have been doing this now for a long time. I mean, in this world ten years, that's forever in alternative fuels. And --

MR. WARD: Oh no it's not.

(Laughter.)

MR. LEWIS: Other than you.

MR. WUEBBEN: We wish that were true.

MR. LEWIS: But I still run into barriers that just spring up from nowhere. And I am not going to spend everyone's time going into them but they come up from nowhere sometime.

So my point is that, you know, the phrase this year is shovel-ready, everybody talks about shovel-ready. And, I mean, you definitely need the shovel but you need the permit too. And

I can tell you, I've got a shovel right now but I need the permits.

The only thing that I would say is I have seen those situations happen. I know that for example Weststart has funding that they reissue and I know the Air District in Sacramento got money that they reissue.

And my only comment is that when you develop the final version of this plan is to don't make that partnership another barrier. I mean, it can be. It's already a challenge to get the location and a challenge to get the funding. But there's enough barriers out there.

So when you make these agreements, and if you are making them with people that are very much involved in the permitting process already, hopefully you attach the agreement with something they are going to do to break down some of those barriers. I just don't want to create another barrier with the way they are set up. That's my only suggestion. Thanks for listening.

MR. WARD: Thank you, Mike, appreciate it. I appreciate your wisdom from the field. I know you have had some trials and tribulations. Next is Greg Roche from Clean Energy. I hope I

pronounced that right.

MR. ROCHE: You got it, perfect. Not many people do. Good afternoon now. I am Greg Roche, I am with Clean Energy Fuels.

And I want to first of all support, strongly support your Investment Plan in natural gas vehicles. It makes sense, it's smart and here is why. If we take a step back and remember, these are public dollars. And what we are all faced with is how do you get the most bang for your buck with limited public dollars.

And natural gas, particularly the heavy duty trucks as you heard from Kenworth's presentation today, immediate off the shelf reduction 20 percent greenhouse gases and gallon for gallon displacement of imported oil, of which one third comes right from OPEC. We all would like to say OPEC, keep your oil, we don't want it. That's where we have got to end up.

And if you take it the next step further and say, you know what, biogas, you can put it in the same engine and get a 90 percent reduction in greenhouse gases. This is near-term folks, this isn't way out there.

As an example my company, Clean Energy,

secured the rights to a landfill outside of Dallas. And this landfill produces enough biogas every day for the next 30, 40, 50 years, to displace 30,000 gallons of imported gasoline. It's real numbers, that's one landfill. Imagine what we can do working together and building up the biogas industry in this country.

Now I have two recommendations though. Recommendation number one is when I look at the chart showing how you are going to spread the money out, you are spending money a lot of different places. And what occurs to me is that what you ought to look at doing is concentrate your money where it will make the biggest difference.

And when you talk about heavy-duty trucks, these trucks that do local delivery, do port drayage and so forth, what drives the industry, what brings manufacturers into the industry, what brings competition and the engines into the industry stimulate demand for deploying trucks. Put the money into deploying trucks. Let private industry step forward and build the infrastructure. Because if the demand is there companies like Clean Energy and others will step

forward and build stations.

Right now today, just as you heard with the electric vehicle presentation a moment ago, we all need customers. And if you put money into actually deploying trucks and let private industry solve all of the other problems, I tell you what, people will step up to the plate.

Look what's happened in Peru, Argentina, Brazil. I don't know if anybody has visited those nations but they have done a great job of stimulating deployment of vehicles. And guess what, there's plenty of places to fuel. We have a station in Peru. There's actually too many stations. That's what happens when private industry steps up.

So that's recommendation number one. Focus your money where you can actually stimulate permanent change.

Number two. Today we are in unique economic times. We are faced with two perplexing problems. Number one, all these new technologies cost more so that's why we are talking about incentives to buy them.

But number two, companies are having a hard time getting access to capital, whether it is

for a loan, whether it is for a lease. So if you can look at your money and say, let's put some into the vehicles, let's put some into a loss pool, or you can leverage your dollars with private industry. You might get a seven to one or a ten to one leverage. If for every dollar you put in you get seven to ten dollars out in vehicle financing you can actually get a lot of vehicles on the road.

Because I can tell you from personal experience working with trucking companies across this country, this is dicey times for goods movement. It's tough for these companies to get through these tough times. And then to go find financing it's real tough. So that's two problem that can be solved with this program. Those are my recommendations, thank you very much.

MR. WARD: Greg, thank you. Thank you, Greg.

(Applause.)

MR. WARD: Next we have Ms. Nathalie Hoffman from California Renewable Energies, LLC. Good afternoon, Nathalie.

MS. HOFFMAN: Hi. I will have a PowerPoint to put into the record but I am just

going to speak from my notes right now.

MR. WARD: Very good.

MS. HOFFMAN: Okay. I understand that -- I didn't get a chance to read it but you handed out a new Investment Plan or some modifications where you broke down the categories, today.

MR. WARD: The Plan is the same as it was released December 23. It hasn't been revised yet, we are taking comments to do that.

MS. HOFFMAN: Okay. Well I downloaded the one from the meeting notice and I think there's some changes in this that were given out today.

MR. WARD: I think we removed the percentages. I think the dollar amounts, we simplified that table. I think that is the one you are referring to maybe.

MS. HOFFMAN: Maybe. Well it doesn't matter. I just didn't look at the one today. So if there's some difference in there from what I am going to talk about, the one that was handed out today.

MR. WARD: I don't think we have changed the allocations.

MS. HOFFMAN: Okay. Well I wanted to

start by saying thank you. This Investment Plan shows a tremendous amount of work and I have been accompanying this pretty much from the beginning, as you know. And I recognize all the work that went into it and I want to thank you for that.

I do want to say that, and I think we can all acknowledge and in fact it is even in the record, that we started this process, the AB 118 process, and there was a general antipathy to purpose-grown energy crops for biofuels. And we actually started off with documents -- the first presentation said, basically said, purpose-grown energy crops are off the table. We will not support, we will not give any money for these kind of biofuels.

And it has taken a really long time. But the time we got to this Investment Plan there was a recognition. We went through a long process. Steve Kaffka, other people explaining that what is true for corn in the Midwest or sugar cane in Brazil isn't necessarily true. All agriculture is local. We will be using crop land that is already in existence, so on and so forth. I won't go through that again.

But the important part of that is, and

in conjunction with the TIAX analysis, which I was surprised to see. The TIAX analysis is the same TIAX analysis that was in -- that I'm sorry, I forget his name -- presented the TIAX presentation.

And in that meeting we pointed out that his analysis of biofuels and the money from biofuels was completely misleading because it is all based on corn ethanol. And the corn ethanol crop exists already, you don't have to establish a corn crop. And there are agricultural subsidies for corn. And the incentives come in when you have already produced and you are selling.

But actually, and we said on the record, there were zero incentives. Zero dollars of incentives for biofuels, purpose-grown energy crops in terms of growing out of crop. You can't have a biofuel unless you have a crop and it has to be a commercial scale so that you keep the plant going.

I think that the first antipathy and the amount of time it took to get over that, in conjunction with your TIAX analysis leaves the Investment Plan, I think it misses the mark on biofuels. You said you want market-ready biofuels

to help us to -- biofuels, fuel cells, hydrogen, electric to meet our 2020 greenhouse gas reduction goals.

The only way, I mean really the best way to do this because this is technology-ready. They are doing this in Brazil, they have been doing it for 30 years. One of the speakers alluded to what is going on in Brazil. We can, we can plant these crops.

I am giving this presentation today in conjunction with Dr. David Grantz who is here from the University of California Kearney Agricultural Research Center. And he will talk about the crops, I am not going to get into that. But we can grow these crops here in California and we can be ready by 2012. We can be generating hundreds of millions of gallons. And the greenhouse gas reductions from these are like 90 percent.

There was something in the Investment Plan that said that the staff didn't have the time to review the well-to-wheel greenhouse gas emissions from this kind of, these kinds of crops due to time restraints. I had made the comment once before and I make it again.

Well first of all there is now the

California GREET model. But also we have peer-reviewed studies. We have 30 years of data from Brazil. Here is a peer-reviewed study from 2008 about sugar cane ethanol and it talks about what the 2020 case will be for Brazil. Which we will be doing from the beginning. That is a 12.6 to 1 energy balance on a conservative basis. So maybe we reduce greenhouse gases 100 percent or more than 100 percent. It is very important that this be included.

And the other thing I was going to say is because the reduction of greenhouse gases is so enormous with this and documented by the International Energy Agency in Switzerland, et cetera, this should be in the super-ultra-low-carbon category. But it is in this category where it does not belong and there is very little money in there.

So we will not have purpose-grown energy crops with one solicitation for $1.5 million to do, you know, a study of it. We are already growing cane in the Imperial Valley but we need to -- and we have academics working on it already.

Maybe I'll stop there. But it is extremely important to get this Investment Plan

right for obvious reasons. It is going to go for two years. The whole world is waiting to see what we do. And if we are going to meet those 2020 goals we have to have these biofuels that are just --

We need what this Investment Plan doesn't recognize and it is something we have tried to get across. Is we don't need money for loan guarantees to build the plant. We can get that perhaps from the federal government, okay. There's a lot of money hopefully from the DOE so we don't need that. And there will be incentives on the other end like the 51 cents a gallon and so on and so forth.

What we need is money to grow out the crop and for development. Because these things don't exist. So we need very expensive engineering studies or we can't get the permits. You talk about barriers. This is the barrier. Okay. So thank you.

MR. WARD: Thank you, Nathalie. I just want to point out that the GREET work that we are doing, it isn't that we don't have the time. It's under a contract, it is a fairly expensive thing. And we are, I think, going to be approving that

contract, I think it is any day now, to start a sugar cane to ethanol, GHG evaluation under the GREET.

MS. HOFFMAN: That will be great. I was just referring to what --

MR. WARD: So we are, we are moving forward on that. Perhaps not in the time frame that you had hoped. But I just want to state for the record, I don't think we have precluded purpose-grown crops at all. I think that may be --

MS. HOFFMAN: No, you haven't precluded them. I mean, they are listed there. But the amount of money that is allocated for them is so small as to be meaningless. I mean, that's the truth if you want me to, you know --

MR. WARD: Let me point out that this is --

MS. HOFFMAN: -- say what you want to hear.

MR. WARD: This is a staff draft Investment Plan. We are taking comments at four workshops, yours included, and that will be -- That Investment Plan is under revision. It will be revised and so it is not a final document.

MS. HOFFMAN: Oh I know that, that's why I'm here.

MR. WARD: The categorization of the different fuels, that is going to be re-looked at. This is the first step in this seven year program. I don't envision that everything will remain the same throughout those seven years. And I just want you to not be downhearted about this.

MS. HOFFMAN: No, I am not downhearted. I am a developer that needs, you know. You can't get this money, as I pointed out before, from VCs because this is not their sweet spot. Like I said in one of the other things, they want two boys in a dorm room whose parents are paying their tuition and who write a computer program that they get the patent and then they scale it up and make a kajillion dollars.

This kind of deal, agribusiness, we have two businesses here, two tracks, an agribusiness and an industrial business. And that's -- You are not going to find private equity, venture capital, that doesn't exist. Believe me, I have been working on this for three years and I know what is out there in terms of money.

And I do know that you are working on

the GREET model but I was reacting to what is on page A-2 of the Investment Plan which says:

"Due to the time constraints this analysis did not evaluate the technological readiness, the necessary development costs, or probability for this scenario for meeting these greenhouse gas reduction goals."

Okay, say --

MR. WARD: I think that is specifically referring to the 2050 Vision, which was the underpinning of the analytical framework that we established to evaluate GHG.

MS. HOFFMAN: Okay.

MR. WARD: I think that might be a little out of context, if I could say so.

MS. HOFFMAN: All right, well I'll go back and read it. And if it is I'll be the first to admit it.

MR. WARD: It is the 2050 Vision. I think Tim made a point earlier in his presentation earlier, I don't know if you were here to hear that, but he was actually talking about the help we may be able to provide in the predevelopment of

some of these things like feasibility studies and engineering studies. He made that comment. That's something we are standing behind. I'm sorry you weren't able to hear that.

MS. HOFFMAN: I'm sorry I wasn't here to hear both of your presentations. But that is very important, Tim, if you said that because we need that. And it is not just for me. You know I have a sugar cane crop but there are other people that have sweet sorghum. There are other crops that can be excellent grown under different water conditions, you know, different climate conditions. So we don't want to, you know, cut this industry off at the knees. Especially if you want it to be --

MR. WARD: Well we are number one in agriculture not for nothing in California.

MS. HOFFMAN: Exactly.

MR. WARD: So we definitely are paying attention to that.

MS. HOFFMAN: Exactly, exactly. Thank you.

MR. WARD: Thank you. Next, Mark Aubry.

MS. HOFFMAN: Dr. David Grantz is --

MR. WARD: Is Mark in? There he is.

MR. AUBRY: This is different than what you have seen before. This is not the same slide.

MR. WARD: Okay, great.

MR. AUBRY: What I would like to show you today is partially products, partially our production facility. And at least you can put tangible ideas or ideas to tangible on-ground, in-service products. So we'll just roll through this quickly, Pilar, if you want.

That is our factory that we have. It's a 250,000 square foot facility. As you can see the footprint there is not the biggest for vehicle movement but we have an additional property off-site that allows vehicles to be able to be stored, moved in and out and so forth.

MR. WARD: This is the future production plant in California that you are bringing to us? Just kidding.

(Laughter.)

MR. AUBRY: Sure, yes, absolutely. Then the North American marketplace.

MR. WUEBBEN: Where is that facility?

MR. WARD: Where is that facility, Mark?

MR. AUBRY: That facility is, that facility today is in England. The exact replica

of that is what we are bringing here to the States, of which that is in the Midwest. We also own a significant footprint, which I will go through here in just a second, in California, where our future plans would be to include that.

MR. WARD: It seems like a wonderful opportunity here in California for you.

MR. AUBRY: Absolutely. So a little bit about the North American marketplace then. Initial vehicle assembly plant set up, again in the Midwest, and leveraging it from that point. Five hundred total seed vehicles that we will put out in partnership with all of our launch companies that we have, physically started in as early as two weeks ago, right up through the April time frame.

Certification is underway with ARB currently. The production schedule is to deliver physical, tangible vehicles like what you see here and others that I will show later on, as early as July. And then there is further development in collaboration with Ford US.

And overall the total number of production vehicles that we will be able to handle out of that facility that you saw previously. And

the one here that we have in the States will be upwards of 12,000 vehicles by 2012.

So then a little bit about us. I won't spend a whole lot on that. Two of the biggest things that really set us apart is making electric vehicles we are the largest company that is out there. We are the longest out there as far as almost 90 years worth of experience. And as far as the world, largest products. There is nobody out there today that makes an all-electric up to 26,000 pound gross vehicle weight truck. That is in production.

Then the addressable market. I really won't go through that. If you want to tab through, Pilar, just through the remainder of those. Obviously dense, congested urban areas, lots of starts and stops. Significant interest I think could be here in the port type application. You know, it is not driving a great distance, they have always got a plug-in location that is fairly close by. But the way we built the majority of the vehicles is from that 50 to 110 mile range so it can handle outside of the port arena.

And then really after this slide it's just pictures of products that we have got. But

this is our footprint on the left hand side. UpRight Powered Access is based in Fresno where we were at this past week. Our main drivetrain supplier and motor supplier is here in Torrance, working with fast charging suppliers in Monrovia.

And then essentially we will have a supply footprint that is in these cities that as we would like to steer companies to put products here we will have to have a service network of technicians and engineers. We talked about green jobs all day today. We would have to hire engineers and technicians in these local markets to physically support the vehicles as we are out there.

And then really the benefits, I think to just quickly run through those. Ease of use. The physical vehicle. Maximum goods movement. Because there's not a lot of moving parts in the vehicles the vehicles are not going to break down a significant amount. The reality is you do not have to have a huge parts supply sitting around, you don't have to have a lot of intangible products where the vehicles are sitting being repaired. It is physically ready to go. Zero emission vehicle operations, energy efficiency and

security. And then the overall environmental impacts.

And the rest of these. That's the first product that we will bring to market. It's what we call the Smith Newton. I won't run through the GVW capacities or the wheelbases. Pilar, we can just keep going through these fairly quickly.

There's a typical vehicle of what TJ Maxx and DHL have done in Europe with us. A dump truck. Boom trucks. The Ford Faraday is what we call it.

And up there are a number of customers that we have got currently in Europe. Some of them you would well recognize and then others, you may see some of those companies here in the US using our products as launch partners.

So with that again we make the recommendation we would like to be able to use the Energy Commission to leverage bringing these companies and steer them into the California market. It is a product that is fully commercialized. It is a product that is ready to go. It is not something that is hypothetical and down the road. It is here, it is tangible, it is now, and we would like to be able to leverage

companies to be able to come into the state. Thank you.

MR. WARD: Thank you, Mark. When do you expect the CARB certification?

MR. AUBRY: From everything that we have with them we would say -- Again, based on the information, two to three months tops. So by the end of --

MR. WARD: Weeks?

MR. AUBRY: Months, months.

MR. WARD: Months, okay.

MR. AUBRY: So by the end of May time frame is what we have for final completion of all the testing, that's not just the approval of the proposal.

MR. WARD: Okay, great, thank you. Next we have Dr. David Grantz.

DR. GRANTZ: Thank you. I have quite a few slides but I'll go through them very, very quickly, I think. I'm working with Nathalie Hoffman that you just heard a few minutes ago. I am with the University of California. Next slide, please. I'll probably go through these fairly quickly.

Just a little bit about me. I have a

long history of working in sugar cane. Measuring crop water use in sugar cane and the physiological mechanisms by which crops, including sugar cane, control their water. So we have a long experience. I used to be with the sugar cane physiology group in Hawaii back when that was a serious industry.

I am currently the director of the Kearney Agricultural Center at the University of California. That is up in Fresno County. So my interests are split between the Imperial Valley and the San Joaquin Valley. What I am going to talk to you about is sugar cane and I will show you some data. I think we have a potential for a biofuel crop in both of those heavily agricultural valleys based on sugar cane and related energy canes. Next slide. Okay, next.

I don't think I need to say anything about the folly of importing corn to make ethanol. I'll move on.

But I would like to say a couple of things about alternatives that have been raised. On the left you see switchgrass, on the right you see miscanthus. Both of these have been touted as important energy crops for California. Just look

at the yields, 12 tons per hectare for the panicum, that's switchgrass. About 25 tons per hectare -- These are pretty, pretty loose numbers. They are not verified in California but they are probably about right.

And look at that crop on the right. That is an enormous grass. A lot of people, especially at the University of Illinois, were very excited about miscanthus as a possible energy source, particularly cellulosic. Next slide.

I did a theoretical calculation based on the energy that is in sunlight. You don't have to remember the numbers. But if you look at the top a C4 plant, that is a kind of photosynthesis like sugar cane, can make about 280 tons per hectare per year of biomass. Okay, that is a theoretical yield based on what is in the sun.

Record yields of sugar cane, total biomass, are one-fourth of that. That is what I want you to remember. That has not been equaled by any other crop anywhere, ever, okay. Sugar cane is an exceptional, biological beast. Okay, move on.

All right, now I want to talk -- That was theory. Now I want to talk a little bit about

what we have achieved in the last year. We have gathered together a whole bunch of clones of sugar cane, energy cane and wild relatives of these canes and grown them both in the Imperial Valley and in the San Joaquin Valley. DREC is the Desert Research and Extension Center of the University of California, KREC is the Kearney Research Center in the San Joaquin Valley.

We have achieved over, equal to or over 40 tons per hectare in widely spaced plants using an average of cultivars that were not adapted for California. Again, we can grow this crop really, really nicely here.

Now my personal research interests are cellulosic so we are looking at maximizing biomass. But if you look at that number that says Brix, that is percent sugar in the juice. In the desert we get 22.5 percent Brix of our highest clone. The industry standard is around 16 so this is incredible. I mean, this plant grows very, very well here, okay.

So I want to make an aside as we move on. The purpose of this talk is to make recommendations. You talk about shovel-ready projects. This is something that we can

demonstrate grows very well here. But I am afraid that the Investment Plan as I read it, much as I actually support it, I think it is actually very good.

But these kinds of agricultural development projects which are not very high-tech and not very sexy and there's a million pieces, I don't see that they fit into the plan very well and it worries me quite a bit. Because I think this is one of the ways that you can move very quickly to make a big difference in greenhouse gas emissions, you know. But you are going to need to fund the life cycle, the carbon balance through the life cycle. That's one little thing.

We are going to need to look at impacts on air quality. We have demonstrated in my lab that extensive crops take ozone out of the air, for example. Well that's important in both the San Joaquin and the Imperial Valley.

So there's all these things but they are bits and pieces. And I don't see the Investment Plan, as I read it, kind of tailored to that sort of research and that is something I would try to advise you on.

I think you need to be able to look at a

sort of integrated agricultural product, which includes some very low-tech stuff. How long can we regrow the crop from a single planting, which saves a lot of carbon because you don't have to run a tractor. But it is pretty low-tech, you know. You plant it and you count the years. Okay, so I made that point. I don't know if the Plan will deal with this kind of project but it really should because these are real already because we are dealing with dirt. Okay, next.

Just a couple of quick pictures. This is a near-commercial sugar cane field in the Imperial Valley as everyone knows. It has been growing there almost commercially for a long, long time. Next.

What you don't know is that there has been a commercial sugar cane industry in the San Joaquin Valley. That was taken just last year. That's a mixed garden plot from some Asian immigrants that do a lot of our more innovative farming in the San Joaquin Valley. And they make a fair bit of money selling that cane grown in Fresno County for juicing and chewing.

And then what a lot of people don't know is that in the 19th century there was actually a

commercial sugar cane and molasses industry in Fresno County.

So there is a history of this in both of these valleys so we are not building something new. But we definitely need funding to optimize it.

Okay, water use. I just threw this in. I'm going to go through these pretty quickly. Everyone says, sugar cane is going to use all the water, it's a terrible thing. Well, this is an irrigation canal with alfalfa behind it in the Imperial Valley. Next.

We did some calculations. The top line there where it says UN FAO 56. This is a paper that I published with some farm advisors down in the Imperial Valley using the standard UN Food and Ag Organization's Irrigation Paper 56, for those of you who know about that.

And we calculated based on yearlong weather that sugar cane in the Imperial Valley around El Centro would use about 5.5 to 6.5 acre feet of water. The dominant crop down there right now is alfalfa, it uses 6 to 6.5.

We also have experimental evidence. You will see there in the middle where it says drip

irrigation. We can produce a sugar cane crop with about 4.5 acre feet of water. So if anything we are going to improve the situation. And these, again, are clones of sugar cane that are not adapted to California, okay. We can do much, much better.

Okay. That bottom yellow box, it says, improved clones with more wild germplasm, meaning Saccharum spontaneum. This is getting into biology here. But that's the wild relative that is already about ten percent of the germplasm of commercial sugar cane. It brings in stress resistance, it brings in rigidity and it brings in high biomass.

We can improve it, the crop, by breeding in. And this is easily done. This is done every year in several places around the country. We can bring in more of these wild relatives to increase the water use efficiency and the stress tolerance.

And the slide here is -- The point of this is that we can grow this crop once we make it a little bit more stress-resistant and adapt it to California we can grow it on marginal lands. In the San Joaquin Valley on the west side, for example. We can grow it with much less water in

the Imperial Valley. And we are not going to be pushing out food crops, that is my point.

Okay, Saccharum spontaneum, we are putting a lot of faith in the ability of that thing. Well look at that plant. That guy's hand is all the way open around the stalk. That's a single plant grown in a greenhouse. But that is a pure Saccharum spontaneum from Thailand.

You start breeding that thing in and you have changed the crop considerably. Well the axes disappeared but this is biomass yield of the 12 or 14 varieties that we grew in two locations last year. It doesn't matter which are which. But look at the two blue and the two red lines. I just colored those to kind of call them to your attention. The blue ones are either 25 percent or 50 percent spontaneum. They are in the high end of the biomass. The red ones, one of those is actually a high yielding commercial clone and the other one is a pure officinarum, which is the other part of the germplasm. Okay, they are down at the low end. Next.

These things differ a lot. The big, fat cane at the bottom is for sugar. The little skinny one is one of these pure spontaneums. It

is a very weedy, reedy, hard kind of clone. Next.

This is the distribution of cane thickness if you will, diameters, across the range of clones that we grew. You will notice that the red ones now are at the fat end, the blue ones are down at the skinny end. Next slide please.

If we look at biomass yield versus stock diameter we can see what we need to be growing are these little skinny ones to get cellulosic biomass, okay. So I am going to leave that right there. The point is, we know how to improve this crop.

The next few slides show some photosynthesis measurements. We know we can make a 30 second measurement on a leaf and predict yield. I have a whole bunch of slides that show things like that, in the interest of time I am not going to do it.

But my point to you is I am not sure the Plan will fund this sort of thing effectively and I think it needs to. I think this is a very important sort of project. That's one.

Two, I do not think it would be very useful to fund 100 different crops that all might be useful. There's lots of things that make

biomass. You hear everything from poplar to corn to this or that. You are going to need to get expert advice. Pick a few crops and make them work. Because there's lots of pieces and ag research is a multi-year research project.

Okay, and with that I think I'll quit. Thank you very much.

MR. WARD: Thank you very much.

(Applause.)

MR. WARD: I think we have several speakers on the Unimodal. In the interest of time can we consolidate somewhat, some of the presentations a bit? We have had presentations at other workshops too. So how would we, how should we proceed here?

DR. SMEDLEY: I will.

MR. WARD: We are going to learn about power dynamics right now?

DR. SMEDLEY: Power electronics.

MR. WARD: Power electronics, okay.

DR. SMEDLEY: I guess one of the points we would like to make and one of the reasons why we had a number of significant people here from our team is that we want to show to the panel that this is a California effort. This is technology

coming out of California that can make California the center for the revolution in transportation throughout the world.

The SkyTran PRT system is not your average electric vehicle because it is an electric vehicle -- I'll get to the slides in a moment. It's an electric vehicle that is actually grid-connected. You know, we have all wished that we had this amazing electric vehicle that had an infinite range. And then the common joke is, yeah, if you could just make a long enough extension cord you would be there.

(Laughter.)

DR. SMEDLEY: A PRT is a little different because it is actually connected to the grid all the time. So I would just like to go through a couple of slides. I did what I could last night in practice to meet the five minute time line that was put forward so I would like to just cruise through these slides, give you a little introduction, and hopefully a little flavor for the type of technology that is going into the system.

MR. WARD: Can you state your name again for our court reporter.

DR. SMEDLEY: Yes okay, yes. I'm Greg Smedley, I am the CEO and president of One-Cycle Control. We are a company in Irvine, California focused on bringing cutting-edge, breakthrough technology and power electronics to the marketplace to substantially impact energy efficiency throughout the world.

So let's go to the first slide. Who is One-Cycle Control? Just to introduce us. One-Cycle Control is breakthrough power electronics technology. This technology was invented at Caltech, very California. It was developed over the last two decades at the University of California Power Electronics Laboratory. This is the only power electronics laboratory in the UC system and it is one of the world-renown power electronic laboratories in the world.

We are productizing and commercializing this one-cycle control technology and have attracted quite a bit of attention from government agencies. As you see here the Department of Defense through the Army. The California Energy Commission, in fact, as well as the Department of Energy.

We are working on mobile electric power

for the Army to improve its efficiency and its power quality. We are working on power quality under a CEC-funded program and expect to start rolling out the first products this year under that program to improve the efficiency of facility transformers in commercial and industrial applications.

Solar inverters. And for the Department of Energy a very hot button area is in grid support. To enable distributed generation through energy storage to be able to support the grid against blackouts like what we saw in New York City a few years ago. So we are working on some very cutting edge stuff. And to add to it, SkyTran. So please go to the next slide.

Just to cover briefly, SkyTran is a grid-connected, personal electric vehicle system. So in this sense it is completely different from anything you have seen before. The only grid-connected transportation you might have seen would be trolley buses and large, electric trains. This is a personal vehicle that is connected to the grid so it has unlimited range. Wherever you lay that guideway you can go.

It is very energy efficient because it

does not have a battery on board and it does not require charging. It has a high voltage DC backbone, which can be leveraged to enable the connection of energy storage. And it also facilitates the interconnection of renewables.

And because of its high rider throughput and its low greenhouse gas emissions it really goes a long way to helping satisfy the needs of the AB 32 targets.

The big picture here is that greenhouse gas emissions, energy and congestion are the three main, troubling aspects of personal transportation. The picture shown here is a vision of the future. SkyTran can do a lot to alleviate all three of these, including the congestion factor. Not just the greenhouse gas emissions and the energy consumption pieces. So I would like to move to the next slide, please.

SkyTran is very energy efficient. And the reason it is is that it is connected to the grid directly to provide the power. And it has a bidirectional connection to the grid enabled by One-Cycle Control technology. This bidirectional connection means that when the SkyTran vehicles accelerate energy comes from the grid. And when

the SkyTran vehicles decelerate the energy goes back to the grid so it can be used by other loads on the grid. So in this sense it is extremely energy efficient. Because it is operating on passively magnetic levitation you do not use energy for the levitation function. But at the same time you end up with a vehicle that is very easy to move. If you just gave it a push it would go a long ways.

The track is where the motor is located. The guideway has individual electric motors across its full length and these provide the propulsion to the system. So the moving vehicle only has to carry the passengers and the vehicle weight and does not need to carry an engine, a motor or any energy storage systems. Let's go to the next slide.

Also because of the fact that it has a high-voltage DC bus backbone, it is very easy to interconnect renewables such as the solar array shown here. And to enable the creation of multiple plug-in hybrid electric vehicle and electric vehicle charging stations at the stations where you would like to get on the SkyTran. And the next slide.

So what we are talking about here is really an evolutionary trend in vehicle technology. As we go across the bottom of this slide we see we move from vehicles that are powered by various fossil fuels to hybrid electric vehicles that include batteries that extend range and reduce fuel use. And then plug-in hybrid electric vehicles to further increase the range. And then larger batteries and no fuel in a full electric vehicle.

When you go up to SkyTran you end up with a system that because it is grid-connected there is no extension cord, there's no moving batteries. Batteries can be leveraged and connected to the high-voltage DC bus like shown in the picture here so as to provide backup power to the system and as well enable the grid, the electrical grid. Through the bidirectional connection to the grid you can enable the grid to do some demand and supply level leveling. So in this sense it provides a very nice coalescence of useful capabilities. Go to the next slide, please.

And this work is underway. There has been a substantial amount of development effort

that has gone into this. What you see here is phase two of the power electronics recently delivered to the SkyTran team and they are working to develop their linear motors that will be used in their SkyTran system.

We look forward to continued development on this program. We believe that through the AB 118 funding and the technology and the innovation that is in California through this California strategic partner arrangement under SkyTran, we have an opportunity working with the CEC to deliver breakthrough transportation technology to the world. Green jobs, manufacturing, high-tech.

And with that, I really appreciate the opportunity to speak and thank you for your time. My last slide just says thank you. And we are in Irvine, California. We welcome you to visit us if you are interested in seeing some of the interesting things we are doing in power electronics to save energy. Thanks.

MR. WARD: Thank you, Greg. Very nice.

(Applause.)

MR. WARD: Are there any other public comments? We have been through quite a few already today. Is there anybody that we missed on

the phone?

MS. MAGA¥A: I don't think so.

MR. WARD: Anyone in the room?

I want to thank you all for attending the workshop. We are a little bit over schedule but I appreciate your perseverance and your patience. Thanks very much.

And please sign up with our list serve at the Energy Commission's website. We will notify you of the next events that we have. Thanks again.

(Whereupon, at 1:17 p.m., the Staff Workshop was adjourned.)

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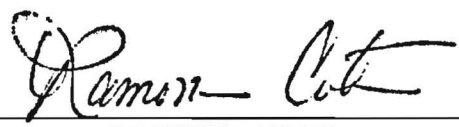
CERTIFICATE OF REPORTER

I, RAMONA COTA, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Staff Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 23rd day of February, 2009.



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