CALIFORNIA ENERGY COMMISSION

LEAD COMMISSIONER WORKSHOP

MEASURING ARFVTP SUCCESS

CALIFORNIA ENERGY COMMISSION

ART ROSENFELD HEARING ROOM

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P R O C E E D I N G S

AUGUST 22, 2016 9:00 A.M.

COMMISSIONER SCOTT: Well, good morning, everyone, and welcome to our lead Commissioner workshop on measuring the success of the Alternative Renewable Fuel and Vehicle Technology Program, which is what the ARFVTP is for those of you who are not familiar with the acronym. I want to welcome you all for being here, it's good to see everyone.

And really where this came from, we have within our ARFVTP advisory committee some folks have asked us to take another look at the metrics that we use to measure the program. We hosted a similar workshop that was kind of an all-day thing in June of 2014, and we're going to do a little bit of a recap of that for you all here today, just a half-day workshop. But I'm really pleased that everyone could be here and I'm going to turn it over to Charles to kick us off.

MR. SMITH: Good morning, everyone. I'm Charles Smith with the Energy Commission's Fuels and Transportation Division and Zero Emission Vehicle and Infrastructure Office. Before we begin I just have to do a few housekeeping items for those in the building today.

This conference is being recorded.

For those not familiar with the building, the restroom is located just out the door slightly to the left.

There's a snack bar on the second floor under the white awning.

And finally, in the event of an emergency please follow Energy Commission staff to the appropriate exits. We'll reconvene at Roosevelt Park located diagonally across the street from this building.

I guess that's it for that, so let's queue up. There we go. Okay.

(Begin slide presentation)

So our program originated from Assembly Bill 118 in 2007. The primary charge of the program as captured here is "...to develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies without adopting any one preferred fuel or technology."

We're also tasked with reducing criteria emissions and air toxics.

In addition to these clean air goals, we also have more specific recent goals set by the

Governor and Legislature such as halving petroleum use by 2030 and hosting 1.5 million ZEVs on our roads by 2025.

(Next Slide)

We're now in our eighth fiscal year of the program, Fiscal Year 2016-17, and in this table you can see a very simple summary of where approximately $600 million in program funding has gone through the end of last year.

We have a broad portfolio of project types, fuel types and technology types, as shown. Everything from low carbon biofuel production facilities to plug-in electric vehicle chargers, to natural gas vehicles, to hydrogen refueling stations.

(Next Slide)

This slide summarizes criteria for funding projects that are spelled out in our statutes. And for those in the room I'm going to try to switch to full screen. That's a little better.

So these are the criteria for funding projects that are spelled out in our statutes. Legislation calls on us to provide preference to projects that maximize these goals. I won't read all of them out, but they include things like

consistency with climate policies, reduction of life cycle GHG emissions, reducing criteria air pollutants and air toxics, increasing alternative fuel use, and technology advancement.

In the lower right corner you can see the most recent addition for us to consider, benefit-cost score, in selecting our projects, and we'll talk a little bit more about that later on.

(Next Slide)

This slide summarizes our projects again, this time by program funding award.

Fuel production, for instance, consists of about $135 million divided between diesel substitute production such as biodiesel or renewable diesel, biomethane in the middle and ethanol at the bottom.

Fuel infrastructure funding has gone mainly toward plug-in electric chargers and hydrogen refueling stations.

Vehicle funding has mostly been a mix of natural gas vehicle incentives and advanced technology trucks.

And we have smaller sums of funding for in-state manufacturing projects and other related activities such as workforce training.

(Next Slide)

As part of the ARFVTP and all Energy Commission programs we're seeking to increase the diversity of our experience. This includes increasing participation of women, minority, disabled veteran and LGBT business enterprises in our funding opportunities;

Increasing participation by disadvantaged communities;

Increasing diversity in proceeding participation;

And increasing diversity in employment and promotional opportunities.

(Next Slide)

These manifest in several ways, including increasing our own program's funding accessibility for all Californians;

Inclusion of more small businesses;

Effecting job creation;

Seeking a greater diversity of ideas;

And recognizing the diversity of communities' needs.

(Next Slide)

Our program also takes special note of investment into disadvantaged communities throughout the state. We use the CalEnviroScreen tool developed

by the California Office of Environmental Health Hazard Assessment to identify such communities.

For those not familiar with CalEnviroScreen, the tool assesses 19 indicators for pollution burden and vulnerability, and assigns each census tract in the state an overall CalEnviroScreen score.

Projects located in census tracts scoring within the top 25 percent of CalEnviroScreen scores are defined as occurring in disadvantaged communities, or DACs.

Our preliminary estimate is that approximately 38 percent of our awarded funding to date has gone to projects located within DACs. And I say preliminary estimate because there are still some projects that need to be incorporated here.

This also doesn’t include statewide projects where the projects could not be mapped to any one specific location.

Compared to the 38 percent figure for all project types, almost two-thirds of our funding for biofuel production facilities has gone into DACs. And this reflects the fact that a lot of our feedstock availability is in the Central Valley, which has a large share of DACs, but it’s also

noteworthy because these are some of the most job sustaining project types in our portfolio. Project types that require more workers for day-to-day operations.

(Next Slide)

This workshop builds on a previous workshop held in 2014 as part of our Integrated Energy Policy Report Update. In that workshop we focused on the recent addition by Assembly Bill 8 of benefit-cost score to our scoring criteria.

We included discussion on how benefit-cost score is both a useful but incomplete measure of program success, and we highlighted some of the work done by National Renewable Energy Laboratory, or NREL, in quantifying the overall benefits of our program.

(Next Slide)

This slide summarizes some of the recurring comments from that previous workshop. In general, we found that participants were supportive of our initial approach to program metrics as well as the robustness of those metrics.

Several of the participants, including NREL, encouraged us to take a deeper dive into metrics that might be unique to each fuel or

technology type.

Participants also supported the notion of policy metrics preceding project metrics, and this is somewhat synonymous with looking at long-term market potential and policy requirements before we look at our near term opportunities.

And finally, numerous speakers emphasized the point that quantitative metrics can inform qualitative judgment but cannot replace it.

(Next Slide)

The next couple of slides are a very quick refresher of the benefit-cost score metric that was mentioned before. Our statute defines benefit-cost score as the ratio of GHG emission reductions to program dollar invested, and you can see how that gets calculated here.

The lower bullet is a reminder from our statutes that this metric is one among several criteria to be applied when we are selecting projects within a competitive solicitation.

(Next Slide)

Also in the previous workshop we went through a few examples of how benefit-cost score is calculated, and we looked at a range of common benefit-cost values for different project types. I

won’t subject you all to that exercise again, but if you’re curious you can find it online at this address.

(Next Slide)

This slide summarizes our general approach to administering the program.

We start with investment plan update funding allocations at the top.

That filters down to individual competitive solicitations, and that’s where the GHG benefit-cost score is applied within those scoring criteria.

And then those solicitations lead to agreements. The staff manage those agreements. We conduct surveys and data collection on those projects, and that all feeds into our benefits report, which happens every two years with the IEPR.

(Next Slide)

Finally, these are a few examples of how benefit-cost scoring was incorporated into our recent competitive solicitations.

So, for example, our recent freight transmission solicitation, we included a scoring element that benefited projects with higher life cycle GHG emission reductions over the project duration per dollar of Energy Commission funding.

This element was one of several under the budget criterion, which was 15 out of the solicitation's 100 total possible points.

Similar scoring elements were present under the project budget scoring criteria for our recent hydrogen refueling station solicitation, and the community or commercial scale biofuel production solicitation.

(Next Slide)

The next few slides look at a series of program wide metrics calculated with NREL's support. Now, for all of these, I should note that since this was done ahead of our 2015 IEPR document, not all of our current projects are represented here.

But this first slide shows our anticipated petroleum displacement through 2025. This is a reflection only of the direct benefits from our projects and doesn't look at any indirect impacts from market transformation effects resulting from those projects.

(Next Slide)

Still focused just on direct expected benefits, NREL also provided an estimate of criteria emission reductions from our ZEV projects. They also monetized the estimated impacts of those reductions

-- which is something that I think Amy Zimpfer from US EPA will touch on later today -- and came up with a range of $4 million to $8 million in benefits per year.

Also of interest, the ratio of monetized benefits per ton of reduced emissions varied significantly by those emissions' county of origin.

(Next Slide)

Finally, NREL provided us with this chart focused on GHG emission reductions through 2030. It estimates both the direct expected benefits from our projects in blue as well as the potential range of market transformation benefits from our projects in orange. You can see the low case and the high case there.

As for the green section, that's an estimate of how far our state's transportation sector needs to go in order to achieve our long-term GHG emission reduction goals.

(Next Slide)

As part of our development and evaluation of metrics for the program we're continuing to expand our data gathering capabilities.

We continue to receive new project proposals and awards from our solicitations, which

help inform future decisions.

Given our program's six-year funding encumbrance deadline, we're also starting to see more final project reports coming in, each of which typically requires a minimum of six months' worth of data collection.

The operations and maintenance grants that we're providing for hydrogen refueling stations include an extended data collection requirement.

The RAND Institute is also working with us to conduct more in-depth project evaluations.

And we've just augmented an agreement with NREL to provide us with real-time data for charging infrastructure and hydrogen refueling stations.

(Next Slide)

To sum up, we're casting a pretty wide net as to the types and sources of metrics to shape our program. This tables highlights some of the common quantitative metrics we've begun looking at. Everything from GHG emissions, criteria and toxic emissions, petroleum displacement, matching investment, and so forth.

Any of these can also be divided by either a project's funding, a project category's funding, or the total program funding to get an estimate of

cost efficiency.

But one thing that we haven't really gotten into here is the development of fuel-specific metrics. These are metrics that can't be readily compared from one project type to another but are nonetheless critical to maximizing the state's dollar and achieving our long-term goals.

For example, our workforce training and development component keeps track of the number of trainees that we've supported.

Another example, our hydrogen refueling analysis includes metrics for things like permitting and construction timelines, the renewable content of dispensed hydrogen, and individual stations' daily fueling capacity. And so we'll be looking more closely at these fuel specific, technology specific metric opportunities as well.

So that's it. Any questions?

(End slide presentation)

COMMISSIONER SCOTT: Let me also note that we do have some members from our advisory committee here and I was remiss in allowing you to introduce yourselves this morning, so if you'd like, the members of the ARFVTP advisory committee to introduce yourselves, please feel free.

MR. GERSHEN: Joe Gershen with the California Biodiesel Alliance.

DR. KAFFKA: Steve Kaffka, UC Davis.

COMMISSIONER SCOTT: Okay. Are there any clarifying questions here for Charles?

Yes. Come up to the microphone so folks on the WebEx can hear you please.

MR. CARMICHAEL: Good morning, Commissioner Scott. Tim Carmichael with Southern California Gas Company. Charles, good morning.

Just one point that I wanted to revisit, and let me find that slide real quick. It's on your point about policy metrics versus project metrics.

I remember this discussion somewhat differently, and whether it's the point you're trying to capture here or not, I want to raise the point that I think is an important one from past conversations.

There are a group of projects that the CEC is funding through this program that are clearly long-term plays. They're not likely to fit well or measure well with metrics that work for near-term emission reduction programs.

One example is hydrogen refueling infrastructure. And what I recall talking about on

more than one occasion is it would be beneficial for the CEC to allocate a portion of the funding, or flag a portion of the funding in saying we are making a conscious decision, a policy decision, to make a long-term play, a long-term investment with this, recognizing that it's not going to show well, if you well, in a near-term emissions cost-benefit analysis or metric. And that's an important distinction.

Whether that's the point you're trying to capture here or not, that's a point that is very important when we're looking at a 30- or 40-year timeline and some investments taking more than a decade to pan out and some we're hoping are going to have benefits next year.

Thank you.

COMMISSIONER SCOTT: Thank you. Other questions for Charles?

DR. KAFFKA: This is Steve Kaffka. I mean, I agree with Tim, but the program has been relatively balanced in terms of investments in natural gas infrastructure, electricity powered vehicles, hydrogen and so on, and it's clear that hydrogen and electric vehicle infrastructure are longer term investments.

I had a question with respect to Slide 18. You mentioned that you're now soliciting help from the RAND project to do evaluations. Can you elaborate a bit on what that is, what you're asking them to do and what that needs.

MR. SMITH: So as part of our regular staff responsibilities, of course, we monitor the progress of each project, and then when the project is completed, the recipient submits a final project report to us.

And those final project reports are useful but they don't necessarily provide the same level of detail that a more focused evaluation, often including onsite visits perhaps, could include.

And RAND has also been charged with sort of providing -- what's the word I'm looking for -- programmatic, or common review, I guess, for the projects under their evaluation.

The final project reports that we get back typically reflect the authors, which are the funding recipients, and so RAND sort of comes in and looks at questions all through one common perspective.

If that helps.

DR. KAFFKA: It helps, but what is that common perspective?

MR. SMITH: I'm not as familiar, unfortunately, with the RAND evaluations as I would like to be, but I can provide more information to you.

DR. KAFFKA: Well, since we're talking about metrics today I think that would be very helpful.

One other question. I can't remember which slide now, there was a comment that quantitative metrics do are helpful but not necessarily primary in establishing setting funding priorities.

So relative to metrics, these funding priorities, they're basically part of the board process? I mean, in other words, if I think about how in the past the board has tried to balance investments in different areas of fuel infrastructure or alternative vehicles, power sources, so on.

Is that what you mean by that comment basically, that the balance among investments may still be a matter of best judgment at the policy level?

MR. SMITH: That's part of it, but there's also the element that quantitative metrics can be misleadingly precise. That is to say if we gave a

very tiny award to a very large project under our current benefit-cost score regime, that would create a very high benefit-cost score even if our award, say, wasn't the tipping point for that project to go forward.

So that's kind of an example of where a narrow focus on quantitative metrics cannot replace the reasonable judgment of whether a project actually would have occurred and whether those benefits would have accrued to the state anyway.

COMMISSIONER SCOTT: Let me add to that.

I think when we had this discussion in June of 2014 there was a panel of about five or six people that was led by Anthony Eggert, and one of the things that came up -- the other way that they -- and I can't remember who said it, I'd have to go back and look at the transcript -- was that you need to use a little bit of common sense as you're putting the program together.

So I don't think that's meant to replace solid metrics, the robust metrics that we use, but I think it was kind of a combination -- and Tim picked up on this a little bit in his comment, right -- there's some near term things that are immediate benefits, there's long-term things that are these

longer term plays and you need a little bit of common sense as you're balancing everything that the Legislature has asked us to do with this program.

So that was my understanding from the conversation we had before, but we'd have to look at the transcript to see who made that specific statement.

MR. GERSHEN: This is Joe Gershen. I just, after listening to what Tim said and what Steve said, I'm curious if you guys had thought in terms of maybe looking at the program and putting a portion of the funding to sort of the 2050 vision or the longer term vision, and a portion of it to near and midterm goals and then allocating and looking at metrics in that way.

That way you're sort of bifurcating how the funding is allocated. You say, okay, these are not going to go on more quantitative metrics but these are. Because obviously we've been talking about metrics for a while; I know Steve and I have a lot and we've been sort of beating the drum about it, but I think that's one way of looking at it.

I think that may be -- I don't want to put words in Tim's mouth, but that may be some of what he's talking about. I'm just wondering if you guys

had considered that approach because that might be one way to look at it.

I know we had proposed back in 2014 having a subpanel to help try to figure these things out, because one of the things I look at in this, and obviously I'm just reading it as everyone else is hearing it, but like any investment, an investor comes along and says, hey, we're going to put money into something and this is what we'd like to see back.

And it's every year some period of time you come back and you say, well, here's what your money got you. You got -- this is the benefits that you've gotten.

And if you say, well, you know, this is going to take ten years on some of this stuff to show a return, but on these other things it's going to show a return more quickly.

As we do have this 2020 goal and then the 2050 vision, and it seems to me that that would be a more pragmatic way to look at it and say, okay, here's some real benefits that we've seen.

And sort of the 800 pound gorilla in the room is the biofuel sector, which has provided more than 90 percent of the benefits in the LCFS program,

so why not look at that and be pragmatic about it? I'm just curious if that's something that was considered. And maybe it has, I just -- that went by pretty quickly.

MR. SMITH: So the specific carve-out between long term investments and short to medium term, that's not something that has been explicitly carved out in, say, the investment plan funding allocations, but you do kind of see it in the actual funding categories themselves.

For example, I mentioned our recent solicitation for community commercial scale biofuel production. That's one funding avenue where we know that we have an opportunity to see big near term GHG emission reductions and petroleum displacement numbers. And then of course we also have, as people have mentioned, the long term plays like hydrogen refueling.

So it's not as though we don't have funding in those categories but we maybe have not made the explicit distinction, the explicit groupings between these are long term, these are short term.

DR. KAFFKA: I just want to commend you all for -- this is Steve Kaffka again -- for, you know, bringing up the social equity characteristics of

some of these projects. The idea that we could somehow extend benefits to disadvantaged communities from this program I think is extremely important.

In the biomass collaborative reports to the Energy Commission we've emphasized the employment potential particularly for biofuel projects.

And for many rural communities there are only costs associated with the transformation of our transportation fuels and energy economy, and the only really substantial way to transfer more direct benefits to those communities is to invest in those kinds of projects, and so I think it's extremely important that the state keep that in mind.

It certainly doesn't just involve your agency's policies. For example, if you're going to have some biomass from agriculture you have to have water, so without water you can't have biomass. So I mean, it's a broader policy concern for what happens in those regions that I'm glad that's explicitly addressed here and I think it's extremely important.

COMMISSIONER SCOTT: Okay. Any other questions for Charles?

Please come on up, Thomas.

Also, if those of you who spoke would kindly give your card to the court reporter, he

would be happy.

MR. LAWSON: Good morning. Thomas Lawson with the California Natural Gas Vehicle Coalition.

I wanted to -- I had a question on Slide 8. The second bullet point says a preliminary estimate of 38 percent has been awarded to the projects in these disadvantaged communities.

My question is, two. One, what is this up to; is this up to last funding year, is it all the way up to 2015, 2014?

MR. SMITH: I don't know the specific stop point.

MR. LAWSON: Okay.

MR. SMITH: I do know that -- well, so some of the projects won’t appear at all in this count because they are statewide, but I think we’re probably including maybe 70 percent of our overall funding portfolio in this initial estimate.

So there are some projects that have not -- in fact, I know that there are certain project types that are underrepresented in this tally, and unfortunately, I know that natural gas vehicle deployment projects are not fully represented in this estimate.

The small share of natural gas vehicle

deployment awards that we did have in the estimate was pretty high, it was probably 50 to 60 percent or maybe even two-thirds. But because unfortunately we're still trying to get the previous batches of our own in-house reservations tagged with geographic locations as well as the UC Irvine reservations and awards tagged with geographic locations, we just didn't have enough projects to pull from to say anything definitive about where our natural gas trucks have been going. But very preliminarily, the majority seemed to have been going to DACs.

MR. LAWSON: Thank you very much.

My last question is do you guys have or can you break this down into the regions? If you're using the CalEnviroScreen, it observed lists regions by --

MR. SMITH: Yes.

MR. LAWSON: So it is divided into regions so you could say a million dollars went to this region?

MR. SMITH: Yeah, yeah.

MR. LAWSON: That would be helpful.

MR. SMITH: Okay. Yeah, we can provide that to you.

MR. LAWSON: Great. Thank you.

COMMISSIONER SCOTT: Okay. Well, thank you very much, Charles, for your excellent presentation.

We're going to go on to the group presentations and discussion. I don't know if the group wants to all come up to the table here or would you like to go up to the podium, or you can present from where you like.

Our first presenter will be Lisa Macumber from the Air Resources Board. Welcome Lisa.

MS. MACUMBER: Thank you, Commissioner Scott, and thanks for having me today. My name is Lisa Macumber. I'm the manager of the Innovative Light Duty Strategy Section within the Mobile Source Control Division at ARB. I oversee the clean vehicle rebate project and development of the ARB's annual low carbon transportation and air quality improvement funding plan.

Also with me today is Mr. Kyle Goff who works in our Carl Moyer Program.

I'm excited to provide an update on our projects that we fund and how we evaluate and measure our success.

(Begin slide presentation)

ARB oversees a broad portfolio of incentives, funding everything from fleet turnover

to precommercial demonstration of advanced technologies in heavy duty vehicles and equipment, to rebates and vouchers for advanced technology light and heavy duty vehicles.

And in recent years we've begun to target our investments to pilot and equity projects that increase mobility options for lower income consumers and disadvantaged communities.

These multiple programs cover a wide ranging spectrum of vehicles, technologies, and consumer types. While each of these programs support multiple goals and priorities, together they aim to further California's broad goals to improve air quality, reduce greenhouse gas emissions, cut toxics exposure, and reduce petroleum dependency.

Since there are different goals for each program or project that we fund, there are also different metrics that we use to evaluate our funding options and measure our success. Today I'm going to focus on just a few of these programs: The Carl Moyer Program, the Air Quality Improvement Program, and Low Carbon Transportation and Fuels.

(Next Slide)

Beginning in 1998, the Carl Moyer Program funds projects that yield surplus emission

reductions that are creditable in the State Implementation Plan, or SIP.

We define SIP creditable emission reductions as quantifiable, enforceable, surplus, and permanent. The program is implemented through a partnership between the air districts and ARB. ARB oversees the program and manages program funds and publishes the guidelines.

And the air districts implement the programs in their areas. They solicit, evaluate, and fund specific projects.

A key requirement for projects funded by the Moyer Program is that they must meet a cost effectiveness limit. Currently the limit is about $18,000 a ton. While NOx and ROG emissions are given equal weight in the calculation, emissions of participate matter carry greater weight to recognize that diesel PM has been designated a toxic air contaminant.

In response to a program evaluation conducted by ARB and the air districts, new legislation passed in 2015 requires new guidelines for the program to be adopted next year. SB 513 allows ARB to revise the cost effectiveness limit annually to account for the costs of emission

control technologies and state and local rules and regulations. This allows the program to recognize that in order to meet future SIP goals it will require the deployment of cleaner advanced technologies, and these technologies currently cost more than previous traditional engine technologies.

(Next Slide)

Further, SB 513 also expands co-funding and leveraging opportunities and includes eligibility for funding infrastructure. Infrastructure projects differ greatly from traditional projects funded through the Moyer Program, and in recognition of that and the idea that infrastructure enables and supports additional emission reductions, such projects are not statutorily required to meet a specific cost effectiveness limit.

ARB staff are working in collaboration with the air districts to develop criteria for infrastructure projects and are considering a wide array of eligible project types, including zero emission charging stations, alternative fuel stations, and the expansion of traditional agricultural pump and shore power projects. These will all be part of a proposal to our board that they'll be considering early next year.

(Next Slide)

And now for AQIP and low carbon transportation and fuels investments.

AQIP projects launched in 2009 and they focus primarily on reducing criteria pollutant and diesel particulate emissions often concurrent with greenhouse gas emission reductions.

AQIP programs support either turnover of older high polluting trucks or the development and commercialization of advanced technologies.

As with the Energy Commission, AB 8 also directed ARB to calculate a benefit-cost score. ARB staff developed a methodology for this calculation, and each year as the annual AQIP funding plan is developed, staff reevaluates the methodology and conducts necessary analysis to determine which projects to fund. I'll talk a little bit more about our methodology later in the presentation.

With the introduction of cap-and-trade auction proceeds, however, much of the funding for advanced technologies has shifted from AQIP and this year the program focuses primarily on supporting the cleanup of the diesel fleet.

AQIP also provides the foundation for low carbon transportation and fuel investments, which

made up the majority of our funding the past couple of years. Funded from cap-and-trade auction proceeds, these investments greatly expand the scale of our advanced technology investments.

They support the transition of freight and passenger vehicles to near zero and zero emission technologies, and aim to reduce greenhouse gas emissions and provide benefits to disadvantaged communities.

(Next Slide)

For both AQIP and low carbon transportation and fuel investments, staff evaluate projects and their progress using both quantitative and qualitative approaches. The methodology to calculate emission reductions for both programs is very similar.

As I mentioned previously, we developed a methodology for determining the benefit-cost score, and that work has helped lay the foundation for how we conduct our emission reduction calculations for these projects today.

Calculations are based on many factors, including vehicle model year, fuel economy, vehicle usage, project life, incentive amounts, and more.

Staff uses various data sources to

establish assumptions that go into the calculations, such as using EMFAC and our GREET model. And we analyze the data and refine it over the course of the funding plan development process and timeline and then we include a detailed description of our methodology in the funding plan for the public each year.

In addition to this detailed quantitative analysis, we also consider project goals, technology advancements, impacts to consumers and communities, levels of education and outreach, and other more qualitative factors to help us determine how funding might best support each of our projects.

Finally, as required by AB 8, for AQIP projects we also evaluate six specific and varying criteria, which is done through a combination of quantitative and qualitative analysis.

(Next Slide)

For my last slide I'll update you on specific steps we are taking to evaluate our incentives for advanced technology light duty vehicles where a substantial amount of our AQIP and low carbon transportation funding has been spent to date.

This last June the board adopted a long-

term plan for our light duty investments, which included a three-year funding estimate, market and technology review, and evaluation of when the market will be sustainable without incentives.

Given that the light duty zero emission vehicle market is still in its infancy, making up only about 3 percent of the new passenger car sales in 2015, we do not believe that there is any one singular approach to evaluating incentive success in moving the market.

Rather, we adopted a list of indicators that will be evaluated each year as data is available to help demonstrate the progress that has been made by the market overall. Some of these indicators are listed on this slide.

While this year's plan did not include an approach for ramping down incentives just yet, as the indicators show positive market growth in various areas, we do expect to refine the existing projects and ultimately either phase them out or transition them to different types of incentives.

And with that I'll conclude my remarks and I'm happy to take any questions that you might have.

(End slide presentation)

COMMISSIONER SCOTT: Great. Thank you very

much. I am really interested, actually, in the indicators that you just mentioned. If you would like, it would be terrific if you would go into just a little bit of detail -- I know you weren't going to read off all the data on the slide -- but to help us understand how you picked those indicators.

Is it at the end of each fiscal year or is it at the end of each kind of calendar year that you'll go through and compare what you got with the indicators?

MS. MACUMBER: Absolutely. So last year in developing a long term plan we held a pretty rigorous workgroup process. We met with our stakeholders regularly and looked at different things that could be measured, one of which is just measuring general market growth. Looking quarterly at new car sales and watching the trends in how the market is moving.

There was huge interest in the growth of consumer awareness. That's a little bit tougher to measure at this point, right. So we looked at just all different types of options.

So a few of the things that are listed on the slide is looking at the market in general.

We had been in the process of conducting a

technology assessment report with US EPA and just recently released that. And so looking at how technology costs are coming down over time, battery costs, hydrogen fueling stations, all of that to get an idea not just is the market growing a little bit, but is the technology getting cheaper. Are we really starting to reach those economy of scale that we're trying to reach with these vehicles.

So what we're doing each year is we've got our list and we're going through and where is there data available? What do we know? Is there anything new that we've learned from last year? And we're doing it kind of periodically throughout the year.

Our funding plan comes to our board in June and we typically wrap up our funding plan for public comment around the April/May timeframe, and so we kind of cut off our data a little bit before then, so it's not really on a calendar year basis, or fiscal year. It kind of just fits within out planning schedule.

COMMISSIONER SCOTT: Thank you.

Are there other questions for Lisa?

DR. KAFFKA: The ARB has various scenarios that they use for projecting vehicles and fuel use. To what degree do those scenarios feed back into

particularly the light duty incentive program? I'm talking about compliance scenarios for the LCFS.

In other words, there's a series of exercises that at least one division in the ARB has gone through to try to establish what fuels are likely, what kinds of pathways are likely going forward.

MS. MACUMBER: Right. We do work closely with the LCFS team and for the most part we do consider the scenarios that they are developing.

Right now, because the majority of the work that they're doing is a little bit longer term. They've got credits and so forth that they take into consideration. We have really focused more on just looking at the market more specifically, but we are working with them to figure out, you know, what other ways we can use what they're learning within their program to help inform some of our decisions.

Basically, some of our indicators do kind of cover that how fuel production changes over time and how clean fuel production is getting; does that have an effect then on what will happen with the vehicle market.

Right now there's not necessarily a consistent metric that we can use to actually do

those measurements but we're talking with them, constantly looking for ways to refine it.

DR. KAFFKA: I'll give you an example.

As I understand it, there's going to be a crunch coming up on the identification of low carbon intensity fuels. Partly that's based on the 10 percent blend wall that's there with ethanol in particular.

There are at least some of the vehicle manufacturers who think that higher alcohol blends in engines could significantly aid in the achievement of CAFE standards. For example, presumably also they would be low emission vehicles.

So what degree do your incentive programs, for instance, take account of that kind of thinking?

MS. MACUMBER: So the majority for the air quality improvement program and low carbon transportation investments, we are only funding zero emission battery electric fuel cell and plug-in hybrids, and for the most part we aren't looking at it across all fuel types for when we do our projections going forward.

Essentially in the years the program has been developed we've really refined what it is we're spending our money on, because we have such limited

funding sources, and really just kind of pushing the zero emission technology. So the majority or our analysis is what do we do to reach the Governor's long-term goals of getting 1.5 million vehicles on the road by 2025 and other targets for ZEV technology, and how can we best structure our incentives to reach those goals.

The fuels and the larger vehicle market is extremely important, but for our piece of funding on this we're really focusing it mostly on the ZEV technologies. So how the rest of the market looks, again, it's important but for the funding decisions we have it's another discussion.

COMMISSIONER SCOTT: Great. Thank you.

So let's go next to Matt Miyasato from South Coast Air Quality Management District. And a special thanks for coming on a Monday, we really appreciate that.

MR. MIYASATO: Good morning, Commissioner. Thank you for inviting us to participate. I was here two years ago, and I reviewed the slides that I presented two years ago and they pretty much hold up the same. I think it's an important point that Tim made is you really should be looking at commercial technologies differently from pre-commercial and

near commercial technologies, and I'll go over that.

I do want to start, as I always like to do, is talk about the south coast because that'll inform the lens that we view our projects through, right.

(Begin slide presentation)

So we're the largest air quality management district in the country. The four counties of L.A., Riverside, Orange and San Bernardino, so you can think of us as the greater Los Angeles region. But almost half the state's population resides within our boundaries.

(Next Slide)

We also have about 40 percent of all the containerized goods that come into the United States go through our ports of L.A. and Long Beach, so that means the communities that are in those areas are bearing the brunt of the goods movement system and exposed to those emissions as it goes from our region to the rest of the country.

(Next Slide)

This is just a slide showing a particularly bad day just a couple weeks ago in July. That kind of purple dot that you see up there in the Inland Empire and up here in northern L.A. County, those are very unhealthy air quality for everyone that's

exposed to that air mass.

Also, the red is unhealthy. And then orange, which covers almost the entirety of the basin, is USG, unhealthy for sensitive groups, so that's our children, those with developing respiratory systems, and the elderly are those that are suffering from respiratory disease like asthma.

And so it's a big health issue that we're dealing with in order to clean up the air.

(Next Slide)

This was just a couple headlines in the L.A. Times recently. We are suffering the worst smog season in recent years. The drought is not helping us, and we're seeing that there's a lot more hospitalizations due to air quality issues.

(Next Slide)

And if you look at the sources of those emissions it's really mobile sources. So you can see stationary sources for which we have regulatory control only apprises about 19 percent of all the emissions. This is looking at a 2023 inventory. And most of those, 80 percent, are from on-road and other mobile. Other mobile are marine vessels, aircraft, off-road equipment. But essentially all the traditional diesel technologies are the ones

that are causing a large amount of that NOx emissions.

(Next Slide)

And so if we look at the priorities that we have, it's essentially reducing NOx emissions. We've got to reduce NOx emissions across the board, and I'll talk a little bit about that in a coming slide.

We look at what's the inventory of vehicles or applications and duty cycles.

What's the potential for scalability. That is, can you work with an OEM and get a product out and then have manufacturability.

What's the timing of the technology; how soon can it come to market.

We also look at local issues like EJ communities and the impacts. So for example, in the port area.

We look at leveraging of co-funding and working with our partners at the state and federal level.

And then co-benefits. Does the technology offer us GHG reductions as well as criteria pollutant emission benefits, and those are the things that we look at.

(Next Slide)

And so you could devise, and what we've done is put in a (inaudible) air quality function diagram. We weighed it. You can see here is all the priorities that I just talked about and you can look at the different categories.

(Next Slide)

So this is something that you could do. It sounds like you are doing a lot of that on a project by project or even sector basis, and it will tell you how you should prioritize your funding for a given amount of funding.

(Next Slide)

However, as we get closer and closer to our 2023 deadline to meet the federal standards, we've got to reduce emissions by about 45 to 55 percent by 2023. And you can see, as I mentioned before, that the top NOx sources are those that are listed at the top of this stacked bar chart. Heavy duty trucks, off-road equipment, ocean going vessels, etcetera.

(Next Slide)

And so it's a pretty tall order to reduce all of those by about 50 percent in seven years. So if you look at it in terms of what that means is we'd have to replace this many trucks times 15 every year until 2023, so that's about -- what's shown on

this page is about 1,000, so it's about 15,000 trucks per year until 2023.

(Next Slide)

And so this is what I feel like every night as I'm thinking about how do we replace those trucks.

(Next Slide)

And so I was telling John earlier is we have the luxury of being very focused on NOx reductions and that's what we're trying to achieve.

So just as a thought experiment, if you look at technology development and demonstration, there's only a couple levers that really government can apply, and that's looking at government funding, which is the lower X axis here, or regulatory certainty.

And the things that we are trying to achieve in replacing all those trucks is really working with OEM, so you can imagine that there's some amount of funding in which the OEM will participate with us. Or there's some amount of regulatory certainty at which the OEM will participate with us.

Or, which we don't have control over is market pull, but if there's high market pull you can

imagine that you'd be able to work with OEM.

If none of those situations exist you're likely going to be working with an integrator or small supplier, which we've seen as we've developed through the hydrogen infrastructure story.

But then what we really need to get to is this kind of top corner here where you need to have high regulatory certainty and likely lots of government funding in order to deploy and incentivize a market.

And I think that's really what Lisa was saying, is continuing incentives for this nescient market of clean vehicles, near zero emission technologies.

(Next Slide)

And so let me just conclude by saying that I think Charles had a good point, I think you made a good point too, Commissioner, is that, to paraphrase a recent presidential candidate, you really need to use judgment when you're allocating the funds.

I think it is appropriate to have a portfolio like you do and like we do at the South Coast, but that's really for organic approach for meeting your long-term goals.

In the near term we can be very focused

because we know what we have to do in seven years, replace a bunch of heavy duty trucks, but that's where we're looking to work with the state and continue to work with you to ensure that we can work together to make that successful.

But at the end you're going to need national markets because you're going to need that market pull as well in order to accelerate the turnover.

(Next Slide)

And let me just conclude with recent collaborations. We've worked with the Energy Commission in all of these different technologies. We've had a very successful collaboration working with the state and the regional governments and I think we can certainly show that that is a scenario and a calculation that works.

So with that I'll just conclude and be happy to answer any questions.

(End slide presentation)

COMMISSIONER SCOTT: Great. Thank you very much. We also very much appreciate the strong collaboration between the Energy Commission and South Coast. Thank you for your partnership.

Do we have -- I'm just kind of letting the

advisory committee members ask the questions, or even folks from the audience because we have a little bit of time for discussion, so are there questions for Matt?

DR. KAFFKA: Yeah. This is Steve Kaffka.

Natural gas or biogas fueled vehicles have, especially with those low NOx engines, have great promise, but there are other uses for biogas as well for power generation in terms of greenhouse gas credits and so on.

Have you thought about the relative pull that your regulations have on the direction of biogas allocation in the marketplace? I mean, it probably will go to transportation fuels, it seems to me, because you've got new AD systems being established for MSW conversion and so on.

MR. MIYASATO: So, as I mentioned, we have been solely focused, at least in the technology development arena, on mobile sources because that's where the NOx emissions are. And we are funding projects, as you mentioned, the .02 gram engine, we helped develop that with the Energy Commission.

But one of the things I mentioned is the GHG co-benefits, so to the extent that we can incentivize or encourage biogas development, RNG for

example, we are doing that, so we have a couple projects looking at digestered natural gas or renewable natural gas or waste fuel. So yeah, that is something that we're trying to incentivize.

COMMISSIONER SCOTT: Okay. Great.

MR. MIYASATO: Thank you.

COMMISSIONER SCOTT: Thank you very much, Matt.

Next we will have Amy Zimpfer from US EPA Region 9. Welcome Amy.

MS. ZIMPFER: Good morning, everyone. My name is Amy Zimpfer, I'm an associate director in the Air Division at US EPA. Commissioner Scott, Advisory Committee Members, it's an honor to be here again.

(Begin slide presentation)

And it was actually really rewarding to have the opportunity to take a look back two years ago, what had EPA presented and how have things changed. Like Matt, it's for the most part consistent with what I presented before, but as I go through the slides I will provide some updated statistical information and methodologies that we've changed a bit over the last couple years.

(Next Slide)

Here's what I want to go over.

I'm going to talk a little bit about how we use benefit metrics in our rulemaking. It would be that regulatory certainty piece of Matt's presentation and how we really bring metrics into our regulatory impact analysis that we're required to do. It really does guide our decision making in terms of our regulations.

Second, I'm going to talk about the social cost of greenhouse gases. When I was here two years ago, I described the social cost of carbon. We have expanded that to two additional greenhouse gases, and I'll talk a bit about that.

And finally, the diesel emission quantifier. This is a health benefits module that we use when we select projects for diesel emission reduction dollars and it very much focuses on the monetary benefits of PM2.5 reductions because we all are very well aware of the health impacts associated with PM2.5.

(Next Slide)

Regulatory impact analysis at EPA. This is something that's critical when we take our rules to the Office of Management and Budget. They look at those numbers. And we over the years have conducted

credible scientific-based regulatory RIAs, or impact analyses.

This has been underway for many, many years, and we quantify the monetized costs and benefits. The monetized benefits typically far outweigh the cost. This is something that we've improved quite significantly over the last two decades.

When I was here in 2014, I provided some examples of EPA rulemakings and what has been yielded between 2002 and 2012. Today I am able to provide to you from 2004 to 2014 EPA's overall rulemakings yielded between $193- to $848 billion in annualized benefits compared to $47- to $62 billion in annualized cost.

And I provide a citation here, you can take a look at it. These are our most recent dollar costs that we have available.

Just by way of comparison, when I was here two years ago we had an evaluation of the rules from 2002 to 2012 yielding $112- to $638 billion in annualized benefits compared to $30- to $37 billion in costs. So we're increasing that benefit/cost ratio.

Just want to emphasize that the human

health benefits include reductions in premature mortality risk and a number of reduced morbidity impacts.

The PM2.5 numbers very often are what are driving our cost benefit ratios for many of our air quality rulemakings.

One thing that hasn't changed is that ratio for our national clean diesel rulemakings. They continue to expect to outweigh cost by 18:1 in 2030, and this includes regulations not only on the light duty side but the full range of heavy duty vehicles.

(Next Slide)

Social cost of greenhouse gases.

As I mentioned when I was here just two years ago, we had a metric that we were just beginning to use called the Social Cost of Carbon, or SCC. We have expanded that to the Social Cost of Greenhouse Gases, and this estimates the monetary value of climate impacts associated with marginal changes in greenhouse gas emissions in a specific year.

And as I mentioned, we've expanded beyond CO2 to methane and nitrous oxide and we take into account the global warming potential of the methane and nitrous oxide when we do these evaluations.

How do we apply this? It's used to estimate the global climate benefits of federal rulemakings.

Just last week we finalized our next phase of greenhouse gas carbon regulations for the heavy duty and medium duty sector, so if you'd like to take a look at that and how we've applied the social cost of greenhouse gases, you can take a look at that rulemaking. I do provide some more information here.

(Next Slide)

What is the methodology used for the social cost of greenhouse gases?

First, we estimate the damages. We take a look at the future global climate change damages, including changes in net agricultural productivity, human health, and property damages, for example, from increased flood risk.

And we do take a look at the emissions timing. So we take a look at the year that the greenhouse gas release or reduction happens, and then we take a look at the impact and benefit estimation as it's based on the present value of climate damages over time. And I have a chart next that I'll show you an example of this.

We use a discount rate to reflect

uncertainty. There are now four co-equal social cost of greenhouse gas values that are used based on different discounting rate assumptions to represent how damages are valued over time.

Just as I presented in 2014, there are limitations with this methodology as there is with any metric. We've talked a little bit about that already this morning.

We believe that we actually very likely underestimate the damages because we have really incomplete ability to capture catastrophic & non-catastrophic impacts.

We have some uncertainty around the treatment of adaptation and technological change. It's a bit hard to predict some of that.

It's also a bit hard to understand how our current measures to adapt to a change in climate can be captured in this metric.

There's also uncertainty in the extrapolation of the damages due to high temperatures.

And finally, we have some limitations due to the assumptions regarding risk aversion.

And I provide for you a citation where you can look a little bit more at this social cost of

carbon and greenhouse gases.

(Next Slide)

Okay. This is a table, it's a bit blurry. We tried to cut-and-paste from one of our regulatory impact analyses.

Back in 2014 I presented a similar table looking at the social cost of carbon for the years 2012 to 2050, but the metric was for 2011 dollars, so this updates it.

And as I mentioned, we have different discount rates that we take a look at and it estimates our social cost of greenhouse gas methodology. You could do it for CO2, you could do it for methane, you can do it for nitrous oxides. This is an example for CO2 and it takes it out from calendar 2012 all the way up to 2050.

(Next Slide)

Moving on. My third example is the diesel emission quantifier, and I'm going to provide a little bit of information about the PM2.5 monetary health benefit DEQ, or diesel emission quantifier.

This module is used to calculate the benefit per ton, or the BPT values to estimate the monetized health benefits of diesel PM2.5 emission reduction options, and this takes a look at a wide

variety of ways of reducing diesel from vehicles: exhaust after treatment, engine replacement, fuel switching as just examples.

And we apply this to evaluate the benefits of Diesel Emissions Reduction Act, or DERA grant proposals and selected projects.

(Next Slide)

What is the methodology of the DEQ?

First we take a look at the data sources that we have. It's based on data derived from the NEI, the National Emissions Inventory, NATA, the National Air Toxics Assessment, and BenMAP, which is the Environmental Benefits Mapping & Analysis Program. So those are the sources of information we have.

Then we value the benefit. The BPT values are based on avoided incidences of a number of health impacts listed here, including premature mortality, asthma exacerbation, nonfatal heart attacks, hospital admissions, work loss days and even minor restricted activity days. So that's how we value the benefit.

As with the social cost of greenhouse gases, there are limitations here.

The benefits can only be distributed in up

to five counties per project. So when a project comes in and we look at it, for example in California, we can evaluate the benefits only up to five counties.

The second bullet I know probably doesn't have any meaning here in California, but for us where we're evaluating projects out in the Pacific Islands and Hawaii, we cannot use this methodology, the results are only available for counties within the contiguous 48 states.

And for the purposes of SIP or air quality planning or credit calculation that was described by the ARB participant, this methodology is considered inadequate because of the range of uncertainties. When we are going to be providing credit for SIP purposes it's critical, as was mentioned, that they're enforceable, quantifiable in their excess of the baseline of the SIP.

(Next Slide)

So here's just one example. This is an example of on-highway PM2.5 benefits, and a few things I want to point out here.

This is a similar table to what I presented in 2014, but this methodology is very sensitive to population numbers and population density. So the

thought or the question that was brought forward at the beginning by Charles and others that we do have to bring some commonsense into any decision we're making for either project purposes or for making broad regulatory changes, here's an example.

So if you take a look, for example, at Inyo County, the ton per year of reductions is 10 on a particular project, but the county is very large, it has 10,000 acres. The population, 18,000, is larger than Alpine, but the benefit value cost per ton is only 89,000.

If you jump down to San Francisco where there's a project which does have quite a bit larger tons per year emission reductions, the population is around 776,000, but the benefit value cost per ton is $2.5 million. That's because it's a highly dense county. So it's only 47 hectares for the county area.

So that's just something to keep in mind. If you're going to be just basing this solely on the benefit for value, and you're wanting to also look at environmental justice communities, other kind of geographic spread of your projects, you've got to kind of take this into consideration.

(End slide presentation)

So those are the three examples. They're very similar to what I presented two years ago. I've provided some updated numbers.

And we continue to find that these methodologies are very, very valuable tools as we're trying to make both regulatory and project specific decisions.

I'm happy to take any questions.

COMMISSIONER SCOTT: Great. Thank you very much, Amy. I had a question for you on your DEQ module. Is that something that anyone could use? So if we wanted to take a project that the Energy Commission had funded and run it through the module, is that something we would be able to do, or is it more complex or not sharable?

MS. ZIMPFER: Well, I believe it is sharable and I provide a link here on Slide Number 7. I don't think it's terribly difficult, if that's what your question is.

COMMISSIONER SCOTT: Uh-huh.

MS. ZIMPFER: Our staff use it on a regular basis. We use it for every project that comes in.

I did not mention that if you look at, and I think there were some examples given, maybe it was in Charles's talk. We have a number of proposal

scoring criteria and the DEQ is used out of about 145 points total per project, that's currently what we're using for projects that we're looking at right now, about 25 of the 145 are health-based numbers that we use for project selection.

COMMISSIONER SCOTT: Great. The other question I have for you is on Page 8 and you mentioned some of the limitations is that the numbers are not adequate for SIP planning, and you mention that that's because for credits it needs to be enforceable, it needs to be not duplicative and that type of thing.

Is it the credit reason that it's not adequate for SIP planning; it's not because you didn't get a good health number out of it; is that right?

MS. ZIMPFER: Right. It's because it is not refined enough to allow us to go in should we have to go into enforcement and should we in both the quantification of it, it's not refined enough to ensure that the credit is going to be where it needs to be and when it's going to be in place, and then there's also some enforceability issues.

COMMISSIONER SCOTT: Thanks.

Are there other questions for Amy?

Go ahead, Charles.

MR. SMITH: Thank you, Amy. I'm just wondering. You mentioned that the DEQ module produces just a part of the criteria for overall project selection. Do you have examples of what some of those other types of criteria are?

MS. ZIMPFER: Yes. You know, I'm sure similar to you, it's everything from looking at how well is the project proposal written. Do we have experience with that particular grantee, do they perform well. You know, some of the more subjective criteria, and I could provide all of those. Programmatic capability, past performance, looking at sustainability of the project, is it going to keep continuing to have the emission reductions we're looking for, etcetera. We have ten overall criteria; we'd be happy to provide those for you.

MR. SMITH: Yeah, I'd love to see them. Thank you.

MS. ZIMPFER: Okay.

DR. KAFFKA: Steve Kaffka. Has the social cost of greenhouse gases been formally adopted by the agency as through a rulemaking process as a formal criteria?

MS. ZIMPFER: We just used this in the

rulemaking that we announced last week, and this is for the second phase of the heavy duty greenhouse gas rulemaking for heavy duty and medium duty vehicles, the 2018 to 2025 rulemaking. So yes.

COMMISSIONER SCOTT: Other questions for Amy? Okay. Well, thank you very much, Amy.

We will now go to Joel Espino, who is on the phone from the Greenlining Institute and hear a presentation from him.

Joel, are you there? Let me make sure your line is opened up. Okay, Joel, are you there?

MR. SMITH: Joel, are you there?

MR. ESPINO: Yes, I am.

COMMISSIONER SCOTT: Okay, great, now we can hear you.

MR. ESPINO: Hello.

COMMISSIONER SCOTT: Hi.

MR. ESPINO: Good morning, everyone. I'm sorry I cannot be there in person today. Can everyone hear me just fine?

COMMISSIONER SCOTT: Yes, we can.

MR. ESPINO: Okay. Great. So I'll go ahead and get started.

I just want to thank Commissioner Scott and Charles and everyone involved for putting this

workshop together. I've already learned a great deal about metrics.

(Begin slide presentation)

And so quickly, my name is Joel Espino, I'm legal counsel of the environmental equity team at the Greenlining Institute.

Greenlining is a racial justice nonprofit. We're based out of Berkeley, soon to be based out of Oakland so we're very excited about that move. And really our work involves a lot of advocacy, research and coalition building around racial justice issues.

In particular the team that I work on, environmental equity, we're focused on creating policies that reduce poverty and pollution at the same time.

So the CEC has already taken great initiative in increasing equity benefits and we're very happy for that. I guess what I'm going to say today will be nothing new to the Energy Commission and groups like the Air Resources Board, which are in the room, but I'm hoping to provide some finer points around some of these thoughts that we've had to date.

And really I guess the hope for me is to present to you all a racial equity lens that we at

the Greenlining Institute feel is incredibly important to overcoming the various systemic inequities that low income communities and communities of color face and that we feel is incredibly important to securing our collective prosperity, you know, as a California economy, as a U.S. economy, especially when we understand that the demographics are shifting to a more diverse society.

So that's kind of my goal for today so I'll be addressing these key topics here on the slide, you know, understanding what equity means in clean transportation, some thoughts around how to measure progress within equity in clean transportation, and then a few takeaways that I've put together.

So do I just say next slide, is that how we're going to do this? Okay. Great. Thank you.

(Next Slide)

So yeah, so equity in clean transportation, what does that mean? For Greenlining it means a number of things.

It means that when we're talking about clean transportation that any investments and deployments meet the needs of underserved communities that they're impacting.

We all are familiar with the statistics

that greenhouse gas reduction criteria, air pollutants disproportionately impact low income communities and communities of color, so how are we going to ensure that clean transportation investments and planning uplift these communities and are actually meeting the needs of these communities.

So they have to be community driven; they have to have input from the community, and that's what we mean by community driven.

So what do we mean by equity and not equality?

So again, understanding that vulnerable communities like communities of color are not entering the race at the same starting line, right, as middle income or white populations. So there is a great need to prioritize these communities to overcome those systemic inequities that they've faced for many, many years.

So if we're looking at any clean transportation investments or planning, we have to sort of put that at the forefront to ensure that that benefit that is being created by those investments and planning really uplift communities who need it most.

And then the third bullet here, access to clean transportation options. And for us at Greenlining what that means is really that the air quality benefits, right, are reaching underserved communities.

That if there's any components of increasing mobility, right, that we're funding clean transportation options, for example, whether it's electric vehicles, whether it's clean transit busses, that those options be located in and benefit underserved communities and that we're tracking all of this progress, is what we mean by access to clean transportation options.

When we talk about increasing diversity in the clean transportation economy, it's this idea that, you know, we're on this verge of shifting to a clean energy economy. It's new and emerging, it's developing, and if we don't sort of inject some diversity inclusion principles from the beginning, we're going to see these systemic inequities continue again.

One quick example of this is what's happening in the tech sector, right. There wasn't any emphasis on diversity inclusion from the beginning as it developed, and now there's a big

diversity issue within the tech industry.

And so our hope is that as this economy grows, that we're being very strategic and very intentional about including particularly communities of color into these economic benefits that are being produced; whether it's jobs, whether it's procuring services and goods, right, that we're purchasing these services and goods from diverse-owned businesses, minority-owned, women-owned, LGBTQ-owned businesses so that we spread the wealth in a way, right, so that many folks are able to benefit economically from this transition that we're seeing.

And then lastly, ensuring that government is just representative of underserved communities. A lot of the time it's hard for communities to engage in government sort of feedback sessions, if you will, because a lot of the time there's distrust there from underserved communities and governments, right, given that all of these systemic issues that they've had to face. And so a lot of times having diverse representation within government helps alleviate some of that distrust.

And a lot of times folks who have these experiences growing up, you know, people of color, folks who are not white, they have a certain set of

experiences that other underserved populations can relate to. From Greenlining's perspective it's important that we also think about that perspective as well.

(Next Slide)

So what we're seeing here, you know, this is just very high level stuff, right. Kind of what I've explained here today is what I'm hoping to provide a kind of a lens to see all of these metrics, all of these programs, all of these investments through and not get really into the technical details of how you do it but how you measure progress toward equity.

And so measuring increased access to clean transportation benefits in low income communities and communities of color is one way, again, to kind of make sure that we're measuring the greenhouse gas reduction impacts, the criteria pollutant impacts in disadvantaged communities, that we're disaggregating that data, that we're tracking it and reporting it separately for advocates like myself and other folks to see progress within these communities of these investments.

You know, number of jobs created in these communities, and where possible being able to report

out the demographics of who are the folks getting jobs from these projects that the CEC is investing in.

And then kind of just to round them out here, seeing increased participation from diverse-owned businesses in the various contracts that come out of the California Energy Commission, whether that's through them participating in grants themselves or if they're part of a larger proposal and they're listed as subcontractors.

What we want to see is that this money is reaching these businesses and is able to create a more equitable distribution of the economic benefits of this money.

Let me just check my notes here real quick and make sure I am -- yeah, so next slide please.

(Next Slide)

So some of the other takeaways, and I think we've sort of touched on this already in some form.

But this idea of quantitative and qualitative measurements. You know, quantitative measurements are really important for policy making, and I think there's a case to be made too for qualitative measurements, right.

I think as an equity advocate, it's really

helpful for me when I'm talking to legislators, when I'm talking to the public, when I'm talking to community members, is real anecdotes, real stories of how a particular investment from the state is benefiting a particular low income person, right.

And so these kinds of qualitative measurements are really beneficial to kind of get a more comprehensive picture of what these investments are actually doing in low income communities and communities of color, what kind of benefits they're providing.

So that's my point around the quantitative and qualitative measurements.

My point around measurements, you know, they can be simple, right. A lot of the times we've engaged with the Energy Commission, for example, California Air Resources Board and other government agencies, and from our perspective what we see is there is this need from governments to create these, a lot of times, very complex methodologies, right, to quantify a lot of this stuff, when we feel that a lot of the times there can be a simpler approach to understanding what these benefits are.

And just to give you some easy examples of this is just, you know, being able to report out the

number of jobs created, right.

You know, another example, and this is an example from a California Air Resources Board program, but just being able to report out number of trees planted, number of cars deployed in disadvantaged communities -- electric vehicle cars deployed in disadvantaged communities.

These kinds of easy sort of metrics can really help a lot to understand kind of the impact these kinds of investments and programs are having on disadvantaged communities. So offering up this point as an alternative perspective, if you will, in terms of how complex these methodologies have to be.

And then my last point, which I guess I've already kind of touched this topic already, but this idea that, you know, not everything can be measured, right. And the clearest example that comes to mind is issues around community engagement and how to quantify those.

A lot of the times this can't be measured but that doesn't mean it's important, right, and so understanding that not everything is quantifiable and that we should be looking at other approaches, qualitative approaches just to measure the overall impacts that these investments are having.

And yeah, I think that kind of sums up the comments I wanted to make and just really wanted to be available for any questions around this perspective, if you will, around racial equity and how we are able to ensure that we're making progress toward racial equity within these various metrics and investments that the California Energy Commission has. So I'll stop there for any questions and comments.

(End slide presentation)

COMMISSIONER SCOTT: Great. Thank you very much, Joel. I appreciate you taking time to make the presentation to us today.

This is Commissioner Janea Scott, and I wanted to underscore something that you said which actually we can't underscore enough, and that's the importance of ensuring that there's equity in clean transportation.

That's something the Energy Commission takes very seriously. We're always open to ideas and thoughts and suggestions, so if you have them please make them for us. And we do the same for ourselves, of course.

A little bit of a side note, not too much of a side note from the focus specifically on

metrics is that under SB 350 the Legislature has asked both the Energy Commission and the Air Resources Board to study the barriers to low and medium income communities being involved in this clean energy economy, being able to take advantage of this clean energy revolution.

And so the Air Resources Board is looking at the barriers to transportation, so if you haven't been involved in that discussion I would strongly encourage you to do so.

And the Energy Commission is looking at the barriers on energy efficiency and on renewables, and so if you haven't been involved in our discussions, we would warmly welcome your input and information there.

I don't have questions for Joel. Do other folks around the room have questions for Joel?

MR. ESPINO: And I forgot to say, just to interrupt real quick, I just wanted to say next slide and provide you all some resources here and my contact information in case you all wanted to reach out.

So this idea that I was mentioning around kind of qualitative measurements, this is a project, Uplift California, the second one there, that

Greenlining has embarked on, essentially the bullet to tell real life stories about folks from underserved communities who are benefiting from climate investments.

So I encourage folks, if you're at all curious in terms of how this would look, visit this website, read some of these stories, and you get a different picture in terms of how some of these state investments can be reported out so that we understand kind of the fuller picture of these investments.

And then one other thing that I wanted to bring everyone's attention to and we're really excited about is an online toolkit that we recently launched about two or three weeks ago now, and it's called Electric Vehicles for All, an Equity Toolkit.

This really just builds off of our work with the California Air Resources Board, actually, in terms of increasing EV equity through rebates, through financing assistance, through electric vehicle car sharing, and really taking those lessons learned and providing a tool for folks not only within California but outside of California as well to learn from our lessons and what we've been doing here in California, so I encourage folks to take a

look at that if you all are interested. Just wanted to mention that because I forgot to mention it.

Any other questions or comments for me?

COMMISSIONER SCOTT: I think we had one from Steve Kaffka.

DR. KAFFKA: Hi Joel, Steve Kaffka. Are you focused primarily on electric vehicles or hydrogen vehicles, or do you have some interest in other kinds of technologies which might be more cheaply and more equitably deployed?

By that I might mention the higher alcohol blend fuels and vehicles designed to use them. Those would be 20 to 30 percent alcohol blends. Those kinds of engines can be relatively readily manufactured by existing auto industry and the fuels can be readily provided through the existing fueling infrastructure by shifting to higher octane fuels. And they produce cleaner air emissions and they'd be lower cost than some of these other vehicles.

So I'm just curious, are you just focused on the EVs or do you have some broader view?

MR. ESPINO: Yeah. No, that's a really great question. Our scope of work is actually just focused on electric vehicles right now.

We're actually doing a little more of some

strategic planning internally in terms of potentially broadening our scope of work to look at other mobility options and how can we make some of these other mobility options more accessible to underserved communities, and so we're having a discussion about that.

But right now, yeah, our work is mostly focused on the electrification of the transportation sector, and specifically on electric vehicle access.

MR. GERSHEN: Yeah, Joe Gershen here. Yeah, Joel, that's good, I would encourage you to reach out and look at the biofuel sector. Almost all of the plants have been located in disadvantaged communities, so there is, I think, a disproportionate amount of benefits going to folks there in providing jobs and ability for folks to support their families, etcetera.

MR. ESPINO: Uh-huh. Great, thank you for that.

COMMISSIONER SCOTT: Any other questions?

Oh, go ahead Steve.

DR. KAFFKA: This is Steve Kaffka. I can't help myself on this one.

The recent drought has disproportionately affected disadvantaged communities, especially in

the Central Valley and in Imperial Valley and places like that. It's not just the drought but it's also policy related around water management.

Those policies also affect in-state feedstock production at least from agricultural businesses.

So if we're going to have new employment opportunities and new businesses in these areas, other kinds of policies are also, I think, important to think about such as water policy. I just wanted to make that comment and ask if you've thought about those connections.

MR. ESPINO: No, and I think that's a very great point. Yeah, water issues are really bad in California and particularly in underserved communities.

And again, it's like one of those things, right. We're a nonprofit and so we have a limited scope of work, and we were entertaining whether we wanted to get into water policy, and we were just able to secure funding for kind of this clean transportation work and we've just focused on this.

But I know there are lots of great groups out there. Clean Water Watch comes to mind and other groups that are working on the water policy issue.

But kind of to make a broader point about jobs, and I touched on this a little bit in my comments. I agree, I think it's really important as we're transitioning to these different technologies that are going to be in this new economy that we're creating, it's important that we find kind of transferrable skills, if you will, that will allow folks to not only work within, say, the electric vehicle sector but within the renewable energy sector, within energy efficiency sector, or some of these other industries like water. So I kind of just wanted to offer that up.

And it's something that we at Greenlining and other workforce advocacy groups have been grappling with. It's a hard question with a very complicated answer, and I think we're trying to figure out how to best do that, but wanted to provide that comment here.

COMMISSIONER SCOTT: Other questions for Joel? Okay. Thank you very much, Joel.

MR. ESPINO: Thank you.

COMMISSIONER SCOTT: Oh, you're welcome.

Going to turn now to V. John White from CEERT, and he will provide some remarks for us as well. Welcome John.

MR. WHITE: Good morning, all. I'm John White with the Center for Energy Efficiency and Renewable Technologies. So various themed gathering with lots of important perspectives to be listened to, and I just wanted to give a couple comments based on the history and the, I think the increasing need to try to integrate our strategies across different platforms of different policies.

I think one of the things that we've learned from the experience in the RPS, which we have more experience with recently, is if you combine the RPS procurement mandate, you see it as basically a focus on a particular product, particular attributes being required in a particular amount of time, and so the focus has been on cost.

And as a consequence, we've ended up with a fairly unbalanced portfolio because we've bought the cheapest stuff, which at first was wind and then now is almost all PV.

At the same time we have a greenhouse gas target on the state's objectives, and it's assumed that the RPS is equal to GHG reductions by virtue of any renewable we buy is always going to result in greenhouse gas reductions, but it ain't necessarily so because the rest of the system is running on the

basis of other criteria such as reliability.

So one of the thoughts that I have for the transportation sector is we need to think about the attributes that we value the most. And in some cases we don't have a complete enough set of attributes, and I think the discussion this morning reveals the multiplicity of attributes that we might consider.

I think the early work that was done by the Energy Commission some years ago revolved around well to wheel analysis with regard to the ability of different technologies and feedstock to produce different outcomes. Those analyses are really important to maintain and to recalibrate.

I think there was a *New York Times* article on the damage that the corn ethanol industry has done to the topsoil in the Midwest and the resulting runoff into the Gulf of Mexico. This was all based on the assumption that corn ethanol was an air quality and a climate benefit.

I'm not trying to single them out but it's that story where we basically now see on the part of groups like NRDC which strongly supported the renewable fuel standard with the idea that the corn ethanol was a gateway to cellulose and that would be sustainable, it turned out not to be the case.

And in fact, if you go deeper into the air quality analysis that is somewhere in the archives, we'll see that the ethanol addition to the California gasoline pool has not been an air quality benefit. It has had air quality degradation associated with increased NOx.

So the important thing is to have metrics but to have feedback from the real world data and experience. This is where I think that the previous speaker's comments about transparency are really important, because we make assumptions about benefits that when compared to data in the real world don't turn out to be the case.

The other thing is I think the primacy in California of criteria pollutant emission reductions is an important complement and needs to be integrated with our greenhouse gas emission goals.

And again, we assume in our simple way that, well, if we're reducing air pollution we're reducing greenhouse gas, and if we're reducing greenhouse gas we're reducing air pollution, but that isn't necessarily so; it depends.

And I think that what I think the Commission can do a very useful job of doing is of testing assumptions that have been made in the

course of policy versus data and experience from vehicles on the road, and also from the standpoint of the performance of those vehicles.

I think one of the things that concerns me as a policy matter is that our ZEV mandate has become dependent on a vast amount of public investment through the incentives that are deemed to be required for the cars to sell.

We also have a very substantial investment from the utilities coming in infrastructure for charging.

We have a bill that was introduced last week in the Legislature that fortunately is going to have more time for consideration that would have increased the statutory mandate for ZEVs for the purpose primarily, from what we can gather, of generating credits for one particular company in the name of expanding the mandate.

I think, given the pace of our electrification and the importance of it, we need to figure out are we going to be able to make these numbers, a million and a half vehicles by 2025. We’ve actually got other assumptions in CEC reports of somewhere near 3 million by 2030. These are very important targets, but our ability to meet them is

unclear and the cost-effectiveness of the ways of getting there are also kind of subject to speculation.

I also think that we need to keep in mind the criteria pollutant reductions that are needed and the ability of different combinations of investments to yield different results.

And I think that to the extent that the Commission can play a role as the keeper of the data both in terms of the explicit assumptions that are embedded in the policies that we're pursuing as well as the outcomes that we're getting for the dollars expended, the Commission, because of the 118 money that you have, are likely to survive into the future regardless of what happens with the cap-and trade money.

That money could turn out to be all the money that we have, so it's very important that we judge those investments, particularly after the first couple rounds of funding, to see what did we get for the money that we spent, and how does that compare to the goals that we have to meet.

Now, these are sort of dipping into some qualitative metrics perhaps, but I think that the thing that we have to guard against is the siloing

of different policies and incentive programs and not having an integrated whole that looks at what we're trying to do and where we're trying to get.

The pathway studies that the E3 folks have done for ARB works back from 2030 and looks at the investments that are needed to get to the target, the technology mix that are needed.

I think one of the things that was touched on briefly is we assume electrification of everything is the sine qua non of our policy, but at the same time in the ARB scoping plan for short lift climate pollutants we have a very substantial commitment that we are attempting to make to the conversion of animal waste and the methane therefrom into renewable biomethane.

There's significant money available in the Governor's budget and proposed by the Senate to expand the support for digesters. This is a critical link. There's some controversies and a need to consider environmental justice issues, particularly the co-benefits to the communities where these digesters are.

Technically that's not a transportation policy. On the other hand, the output from the digesters, the renewable biomethane, has a couple of

different pathways to get to the market.

One of those pathways is in the transportation sector where we would be replacing the natural gas vehicles with renewable biomethane fuel. And yet the market barriers to that industry or that opportunity aren't necessarily explicitly something we think a lot about, but frankly, we're going to probably need liquid fuels and gaseous fuels into the future.

And I think one of the goals of our policy should be how do we incent the rapid inclusion of advanced clean transportation technologies as part of a portfolio where again we're looking at attributes that include a wide variety of criteria but allow us to see the relationship of these programs to other goals and objectives that this state has.

So I think this is a very useful conversation. I appreciate being invited to speak even though I don't have a formal presentation. I have worked on these issues for a long time and I think that there's much to learn from where we've been, and also giving some thought to where we need to go and how different pathways to get there, and not be afraid to recognize the need for

recalibrating the trajectory of our policies and to make changes based on data and experience such as I mentioned in the case of biofuels where we may have a need to reconsider the goals of the programs that we're imposing based on the experience and the data and the integration of attributes that we now see from the different policies that have been assembled.

So with that, I'll leave it to questions and hope that that's been helpful.

COMMISSIONER SCOTT: Absolutely helpful. Thank you very much.

Do folks have questions for John?

DR. KAFFKA: Thanks for your thoughtful presentation. One of the things that I've thought about off and on for a long time is the best use for biogas.

You mentioned the RPS has been almost entirely solar focused in California. We get a lot of sunshine so it makes some sense, but having a range of sources of fuels or power for electricity is important.

The University of California is a zero net energy program and their main obstacle is natural gas use for combined cycle heat power plants on the

campuses, and it's really puzzling how to deal with that.

At the same time, the fellow from South Coast was talking about the value of biogas as a transportation fuel. And of course biogas could go to electricity production, which is then a transportation fuel as well.

So how do you think about those things?

MR. WHITE: Well, those are good questions.

First of all, let me emphasize that one of the -- and I'm not trying to pick a fight with anybody, but let me just say that our friends at the Public Utilities Commission have a history of disregarding the value proposition when it involves benefits that don't inure to ratepayers, okay. So their whole focus of the RPS is least cost. Least cost.

Okay. So we passed a bill three or four years ago by Senator Rubio that directed them to set up a separate price for bioenergy in the electric sector. There were different applications potentially, food processors. There were some biomass conversions in the forest waste.

But a significant opportunity that was envisioned was for the dairies that could convert to

onsite clean energy either with fuel cells or compliant other technologies.

I think the trick with the biogas is that it’s not clear how much onsite electricity you can produce or whether you can move the product, the resulting biogas, into larger applications.

Because if you look at onsite for each dairy, the dairy guys aren’t in the energy business and they don’t really want to be, but you have to find a home for that product and I do think that there’s a role for power generation.

But three, four years later no contracts have been issued with those incentives in mind, okay. And in fact, that’s a breakdown in the policy apparatus that we have.

I think that the other issue has been the utilities’ reluctance to mix the fuels, the conditioning costs of the resulting biogas and the ability to get it to the pipeline ends up resulting in a net cost of somewhere north of $10 a million BTU, which is out of the money.

So this is where I think some of the modeling work that has been done would be useful to take a look at in this conversation and start thinking about, okay, we need to find a home for the

biogas we're going to collect as a result of meeting our methane targets, and where are the best places and how can that be done in a way that's synergistic with other goals and objectives.

If in fact renewable natural gas is a strategically important component of the South Coast vision of air quality strategy, then we need to think about what it's going to take to get that economic case to be made.

It may be that we should have a policy instrument like a purchase requirement for the utilities, that up to a certain amount they're required to receive and take and pay for the resulting fuel and then put it into their customers' costs, which may not be popular with them

But I think we need to think hard about how those technologies work and we've got to get an ability for the Public Utilities Commission to pay attention to what the air quality agencies and the Energy Commission have come up with, because unfortunately they oftentimes want to do their own analysis, their own metrics, they don't take the word of other people, and somehow we've got to get that value proposition to be reflected in the costs that people are getting paid.

That's a long-winded answer other than to say I think that there is a need to focus on what we're trying to accomplish and the different pathways to get there and the different incentives that will be required and how those pencil out compared to the attributes of what we're trying to accomplish.

COMMISSIONER SCOTT: Other questions for John? Go ahead.

DR. KAFFKA: Sorry, can't resist. Again, Steve Kaffka.

In the same way, biomass power is another fraud issue. And as you probably know, there's a big amount of activity going on about what to do to preserve and protect forests, especially with the large numbers of dead trees and so on.

MR. WHITE: Actually, I had a meeting on that subject last week.

DR. KAFFKA: Yeah, it's going on all around right now. It's a very difficult issue to solve.

Do you think that, again, some kind of mandated program for biomass power to keep our older facilities in shape and --

MR. WHITE: There's two sets of problems. This is another good point.

Again, we have a lack of recognition by the utilities and the PUC that there is value in handling that biomass. And, you know, the biomass plants are baseload plants that tend to need to run all the time. The current fashion is to say baseload is bad. If it's not flexible we don't want it.

On the other hand, we're just losing 2,000 megawatts of baseload power at Diablo Canyon, so it seems to me that a modest amount of baseload energy from biomass would not be such a great burden.

But the utilities are in the least cost business on the RPS. There's a story down in Mendota where you had a biomass facility that came off its contract and couldn't get renewed and had to shut down.

And then right next-door there was a solar facility that went up that was getting 8 cents a kilowatt hour under a RPS contract, and that 8 cents would have been more than enough to support the ongoing biomass plant.

So I think that the other thing is, as with methane, the millions and millions of dead trees that we have that represent a wild land fire risk of dangerous proportions, as we've seen all summer, those are externalities that are not currently

reflected in the prices that people can get for the power that would be used in those facilities.

Again, in SB 1122 by Senator Rubio there was a bucket for new biomass.

One of the things that's happened with biomass is that when we started in the 80's we had a very different forest practices environment than what we have now. In those days you had logging in the federal lands and there was a lot of forest waste that came associated with that. Now most of the waste is associated with thinning the trees for fire suppression, and it's a different market for that product than previously.

So I think, again, this is where some recalibration in our value proposition is in order based on the fact that I'm not sure that solving the dead tree problem with putting the waste into biomass plants is necessarily the only best way, but it's not something that's on the radar screen except among the agencies that are focused on fire protection and forest health.

So this is where we really need to renew our commitment to integrated resource planning and recognize that we have multiple objectives in our state that need attention and have consequences for

the policies that we pursue on transportation fuel.

COMMISSIONER SCOTT: So I think these are two really great very interesting questions that can kind of be the topic of an all-day workshop, a separate workshop, so let me just see if there are questions that are kind of focused on metrics and how we should be using metrics that folks would like to ask to John.

Go ahead, Joe.

MR. GERSHEN: I think something just in listening to the back-and-forth, it seems the old adage let's not make the perfect the enemy of the good, and it seems like that's part of what we're trying to accomplish in this metrics workshop and this metrics conversation is how do we get the metrics to reflect things that are actually quite good, may not be perfect in some ideological sense but may get the job done, and that pragmatic approach is what I think I've often looked at as I've been on this committee for the last five or six years and I've said it just seems to be commonsense that there's a pragmatic approach here and the metrics can or should try to reflect that, and that's what we've been trying to get to.

So I think what I've heard you say, John,

is that we should look at this, that liquid fuels are going to be around for a long time. There are a lot of options in the biofuel sector, and let's truly look at an all of the above approach.

COMMISSIONER SCOTT: Okay. There's one more. Please go ahead.

MR. WESTERFIELD: I'd like to make a comment. Hello, Bill Westerfield from SMUD. Good morning, Commissioner.

I think John makes a very good point about the need for feedback in a variety of areas, and I think the biogas issue and methane containment with dairy digesters is a very good point.

I work for SMUD. SMUD for a number of years now has tried to help finance dairy digesters on a farm-by-farm basis, and it's been a tough proposition when the offtake from those projects is really electricity yet gets renewable energy credits.

We deal with farmers who are not utilities and we're asking them to make these projects pencil out when they're really just dairy farmers. And I think that when the output of that is electricity that has to compete with PV and so forth, it's very difficult for them to make these projects work where

the biogas is valuable enough.

I've had some experience talking with some developers in Germany and in Europe, and they managed to implement economies of scale in the collection of biogas, and the use of biogas that makes it for a much higher value proposition.

And so I might suggest that there are lessons to be learned from those in other places that have gone before us if we will make these markets work in a more sensible way.

Thank you.

COMMISSIONER SCOTT: Uh-huh. Are there any other questions for John? Okay, thank you very much, John.

So we are about to turn to public comment. Before we do that I wanted to just -- oh, I'm sorry, go ahead, Charles.

MR. SMITH: Real quick. We had a comment earlier about the RAND agreement, and Pierre Duvair is the agreement manager and he agreed very kindly to speak a little bit about that topic.

MR. DUVAIR: Good morning, Commissioner Scott and Advisory Committee members. My name is Pierre Duvair, I'm an economist in the Fuels and Transportation Division, and just last month I took

over the RAND contract management.

So still getting a little bit up to speed, but it's a $4.4 million contract that concludes in March of 2017, so it's going to be a sprint to the finish line to finish a lot of the products that we're going to get under that agreement.

The primary goal is to assist the California Energy Commission with methods to assess the performance of our ARFVTP investments, to try and figure out the influence we're having on alternative transportation energy markets, cost-effectiveness of our funded projects, our ability to reduce our dependence on petroleum, greenhouse gas emissions, criteria and toxic emissions as well.

It created an evaluation advisory committee. They provided some recommendations in 2013 and met again last spring. They are providing recommendations on program status indicators. It's more than the volumes of alternative fuels but includes things like how are we reducing barriers to markets and types of low GHG feedstock we're getting.

They're developing a set of case studies is probably the primary thing that we're going to get from them right now and they're scrambling to try

and get as many as 35 site visits done and potentially 15 to 30 case studies completed this fall.

They are going to be making recommendations on EM&V, evaluation measurement and verification, and recommendations on a project tracking system as well.

They're conducting a web-based survey this summary of the grantees and they're conducting interviews and they want to have an interview with you as well, Commissioner Scott, for program staff and policy makers that are familiar with the program. And we should have the results of that survey in October.

And then the key thing they're going to be preparing is an evaluation report, and they've got an initial outline that they've submitted to us and they expect that final report to be ready by early 2017.

COMMISSIONER SCOTT: Thank you. I would be happy to be surveyed, so we'll work on that.

Wait, come back for just one minute. I'd like to know, you mentioned that there was an advisory committee and they met in 2013 and they also met again in the spring. Who makes up that

advisory committee?

MR. DUVAIR: Again, that predated my involvement with this contract, but I believe there's five or six people. Sonia Yeh was on it and David Green and a bunch of others, so I'm not exactly sure. That might have been in the proposal when they won the original grant on who they could get for their advisory committee.

COMMISSIONER SCOTT: Okay. Got it, thanks.

Thank you. Thanks for bringing Pierre for the update.

Well, so I think just kind of in summary, what we really wanted to do today is provide an understanding for you all of what metrics the Energy Commission is using when we put together our Alternative Renewable Fuel and Vehicle Technology Program. So what metrics we're using, how we use them, and provide some context for other programs that have similar goals and are we kind of using the same types of metrics that those programs are or are we using different metrics.

And it seems that we're using a lot of similar metrics to other programs that are working to effect the same type of change that the ARFVTP program is.

As you all know, we have lots of criteria that were laid out for us by the Legislature, about a dozen or so, and Charles showed those to you, so there's a lot that goes into putting that portfolio together.

I think that one of the things that we are always interested in is learning how we can improve, and so if you have additional comments on that I would warmly welcome those.

And the other thing that I would warmly welcome is are there ways that we can better communicate the metrics to you or better communicate how we're using the metrics that we use in a more -- it doesn't have to be an every two year workshop. There may be a way that we can put together a paragraph that goes into various solicitations or different things that help communicate a little bit better how we're using the metrics that we use.

A couple of themes that I heard.

Tim Carmichael mentioned that it's really important to make the distinction between short-term benefits and long-term plays. Matt Miyasato and Joe Gershen also echoed that, and I think that's something I'd like for our team to take back and see. That is something that we do but I don't know

how well we communicate that, and see if there's a way that we can do a little bit better at that.

Air Resources Board mentioned that they've developed a list of indicators that they use to compare their program and the progress that it's making against. I really liked that idea of indicators, and so I'd love for -- maybe my team is already working with the Air Resources Board team to understand and know more about those indicators.

I'd love to understand and know more about those indicators and how that may be something we could wrap into our program as we continue to work to make our metrics more robust.

I think Joel mentioned that it's not just the jobs but it's who's getting the jobs. And so I like that point in terms of making sure when we're measuring things we're measuring them in a way that is useful.

And so if we're looking to see whether or not jobs are going to disadvantaged communities we can't just say this is the number of jobs, we need to have that additional piece of specificity on that metric. And I think that there are other metrics within our program that lend ourselves to that theme.

And then the last part that I would highlight of a very interesting day and lots of things that I could highlight is what John White said about having a feedback loop so we can see whether or not the assumptions we made about the benefits are correct when we compare them to the real world data.

And Charles mentioned in his presentation that we will be collecting additional data, it was on one of the last slides that he has. And so I'd like to talk with our team about making sure that we have the ability to do that.

And it sounds like maybe the RAND project is a little bit far down the line to try to do that type of comparison, but maybe with our next NREL contract or RAND contract or if we need to bid out a new contract that's, I think, a really important point that John raised. The world is changing really quickly, and having a chance to kind of do that real world comparison I think would be really helpful.

So those are a few takeaways that I had from the day.

I would love to say thank you so very much to our terrific presenters. I think they did a great job and gave us a lot to continue to think about. I

really appreciate you being here, and Joel, you dialing in.

And let me see if there are public comments. We didn't have any blue cards here today, but if you have a comment please feel free to come up to the microphone and I would love to hear from you.

MR. CARMICHAEL: Commissioner Scott, Tim Carmichael, Southern California Gas. Just one additional comment.

Unfortunately, I wasn't able to look at it on my iPhone, but I recall last year, I believe, during one of the merit review workshops that you hosted there was a very good presentation by one of the projects CEC funded -- and I will get this to you, I'll look it up on the website later -- but they included in their self-assessment of their project a very good metric table of various criteria that they assessed.

And I remember at the time mentioning it to some of the people on the ARFVTP committee that this would be beneficial to have more of these sort of measurements for the different projects that the program is funding.

I'm just mentioning it to put a place

holder here and I will email you and Charles that presentation when I find it. Thank you.

COMMISSIONER SCOTT: That would be terrific, Thank you.

Other comments here from the audience, folks in the room?

MR. SMITH: Commissioner?

COMMISSIONER SCOTT: Yes.

MR. SMITH: Regarding public comment, since we advertised it as beginning at noon and we might be wrapping up before then possibly --

COMMISSIONER SCOTT: Yeah, we'll come back.

MR. SMITH: Yeah. The public adviser suggested one option would be just leave the meeting, leave specifically the WebEx open until noon and then we can check to see who wants to provide a comment then.

COMMISSIONER SCOTT: Yeah, absolutely. But for the folks who are here right now, if there are folks -- let me just check.

Anyone else in the room who'd like to make a public comment right now? Love to hear from you.

Okay. Do we have anyone on the WebEx who would like to make a comment right now?

MR. NGUYEN: There were some comments from

earlier during the workshop presentations.

We have a comment from Cameron Gray during Charles' presentation. He asks do you know if NREL's real time data on charging stations and hydrogen fueling infrastructure is available to local governments and nonprofit so they can track regional progress?

Cameron is from Energy and Transportation Program Associates for Community Environmental Council, a nonprofit based in Santa Barbara.

MR. SMITH: I'm afraid I don't know the answer to that. I don't know if anyone on our staff who happens to be in the room is aware.

I do know that we had to augment our agreement with them with additional funding, so if it is available it might not be free.

MR. NGUYEN: Cameron Gray also stated during Lisa's presentation where he can find a copy of ARB's light duty long term plans.

MS. MACUMBER: Yes, we have our proposed fiscal year 2016/17 Funding Plan that is posted on our website, and within that -- it's a very large document but you can download the different chapters and sections separately. Within that is our long term plan for our light duty projects.

If you do download the entire document, it comes in right around page 100 or so. It's really toward the back. Here we go, page 93. It's part 2.

And again, it's 20 pages or so that covers a three-year funding projection market and technology analysis, and then the discussion on the indicators and achieving long-term sustainability.

MR. NGUYEN: Thank you. Question from Gary Yowell from CEC addressed to Matt Miyasato. Question now that low NOx diesel and natural gas engines are being sold today that provide greater annual NOx reductions than heavy duty electric and hydrogen vehicles. Why is heavy duty electric still perceived?

MR. MIYASATO: So I think the question is in terms of the existing standard. To my knowledge there is no .02 gram diesel engine that's available. And so the number of trucks that we need to replace, as I showed you that slide, is assuming a .02 gram engine or lower, so that's why we're still pursuing near zero and zero emission trucks.

MR. NGUYEN: Thank you.

So last comment is for John White from Linda Urata. She mentions that not only forest management but local municipal green waste and

agriculture has been greatly impacted by the closing of cogeneration plants throughout the San Joaquin Valley.

Made the comments about ag and municipal waste being impacted by the closure of cogeneration plants in the San Joaquin Valley. Mr. White's comment about the price paid for solar as a renewable as compared to biomass plant is on target.

COMMISSIONER SCOTT: Thank you.

MR. NGUYEN: That's the end of the comments.

COMMISSIONER SCOTT: Okay. And did we have anyone on the WebEx or on the phone who would like to make a public comment now?

MR. NGUYEN: We do have one, John Shears. I can unmute him now.

COMMISSIONER SCOTT: Yes, please.

MR. SHEARS: Good morning.

MR. NGUYEN: John, try it again.

MR. SHEARS: Can people hear me now?

COMMISSIONER SCOTT: Yes.

MR. SHEARS: Okay, great. Yeah, this is John Shears, just for the transcriber, Center for Energy Efficiency and Renewable Technologies, and I just wanted to follow up on the remarks that John

White made in terms of the challenge going forward around the politics of funding the program.

Even though ARB has a part of the program and the Energy Commission has part of the program, it's really a joint effort and there's a lot of coordination that goes on. I just want to recommend maybe a little more coordination, being a member of the AB 118 Advisory Committee and having talked to staff and worked with staff at both agencies, including Lisa.

The issue going forward is, given the politics from the hostage taking around the cap-and-trade money and how that influences the low carbon transportation funding over at CARB, and the burn rate for the CVRP program going forward, especially now that we're having fuel cell vehicles come on the market, raises the issue of not only the financial sustainability depending on the politics around the cap-and-trade money and how that relates to the low carbon transportation funding, but also the political sustainability of continuing to fund it because the numbers are going to get quite large potentially quite quickly.

And so what I would like to recommend is that the Energy Commission work together with CARB

to look more at ways of getting a good handle on how the ZEV markets, both the EV and the fuel cell markets, vehicle markets, are approaching sort of a self-sustaining mode; i.e., where the market itself, we have market pull taking over and incentives becoming less of an issue.

Given that that work is also, I think, really part of the work that ARB has already said that it will be doing as work specific to the CVRP, I'm also thinking that part of that work should look at different ways of funding the incentive and rebate program.

And so I guess what I'm really recommending is -- and it's been discussed I know at some of the workgroups that Lisa mentioned over on the ARB side -- is taking a closer look and revisiting the idea of the feebate model, which I know gives some of the auto companies heartburn.

But I think in terms of a long term sustainable program that can self-finance itself, because I'm nervous about the politics around cap-and-trade and how sustainable that's going to be for programs like CVRP, I'd like to recommend that Energy Commission staff and ARB staff work together to develop analyses.

And falling out of that would also come a set of metrics that both agencies could be using to look at not just the vehicle side because there's obviously huge investments going into the infrastructure, so it's critical that we don't end up with stranded infrastructure investments as well because of politics on the incentive side around getting the vehicles on the road.

So I just wanted to sort of add that additional observation to John White's comments.

COMMISSIONER SCOTT: Thank you, John.

Do we have anyone else on the WebEx? Okay, we've got one more. Hold on a second, we're unmuting you.

MR. GRAY: Hi, this is Cameron Gray from Community Environmental Council. We're a nonprofit based in Santa Barbara, California, and we focus on accelerating the deployment of alternative fuel vehicles in our region.

I just want to say that as we have been looking at our regional progress at deploying more alternative fuels infrastructure, we've been finding that it's difficult to track this in real time. There aren't a ton of free data sources out there.

So if it would be at all possible we would

strongly encourage that the forthcoming metrics, that there be a way to facilitate data sharing with local governments just about what is happening in those regional markets, or easily downloadable spreadsheets, databases that could be analyzed.

That's really my only comment. Lots of great ideas shared today and just very grateful for all the work that the Energy Commission has been doing to accelerate the deployment of these fuels. Thank you very much.

COMMISSIONER SCOTT: Great, thank you.

One last check. Anyone else on our WebEx?

Okay. Well, I want to thank again out terrific speakers and presenters today and thank all of you who weighed in and engaged and made some public comment for us and helped with the discussion.

And we will adjourn now. I will come back at noon in case anyone shows up in the room or on the WebEx to make comments at noon, so I'll be back here in case there's any more public comment, but otherwise we're mostly adjourned.

(Off the record at 11:21 a.m.)

(On the record at 12:00 p.m.)

COMMISSIONER SCOTT: Hello everyone, this

is Commissioner Janea Scott. It is now noon. We are looking around the room here at the Energy Commission; we do not have anyone here to make a public comment at noon. We are going to now turn to the WebEx and to the phone to see whether or not there's anyone who has joined us who wanted to make a public comment at noon.

We're not seeing anybody. We're going to hang out here for maybe three or four more minutes in case someone calls in just a few seconds late and did want to make a public comment, and we'll be right back with you.

(Off the record at 12:01 p.m.)

(On the record at 12:03 p.m.)

(Commissioner Scott opens record again to solicit public comments, but there are none.)

(Record closed at 12:03 p.m.)

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REPORTER'S CERTIFICATE

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

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

IN WITNESS WHEREOF, I have hereunto set my hand this 6th day of April, 2016.

PETER PETTY
CER**D-493
Notary Public

CERTIFICATE OF TRANSCRIBER

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

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

I certify that the foregoing is a correct transcript, to the best of my ability, from the electronic sound recording of the proceedings in the above-entitled matter.

Martha L. Nelson

MARTHA L. NELSON, CERT**367

September 6, 2016