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INDEPENDENT EMISSIONS MARKET ADVISORY COMMITTEE MEETING

Taken place at:

California Environmental Protection Agency

1001 I Street, Sacramento, California

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9:00 A.M. - 11:00 A.M.

Reported By: LaCreisha Vaughn, CSR 13945

ASHLEY CONRAD-SAYDAH: Good morning, my name is Ashley Conrad-Saydah. I'm deputy secretary for climate policy here at CalEPA, and this is the first meeting of the Independent Admissions Market Advisory Committee. Just a few housekeeping items before our secretary gives a few words and get us started. You are here at CalEPA on the second floor. If there's a signal for an emergency, please follow the staff out the doors and we'll exit the building. For the bathrooms, they are right outside this door to the right. I think that's it in terms of emergencies.

In terms of other housekeeping items this entire meeting will be recorded by a court reporter. And she needs everyone to introduce himself or herself when speaking. If you do not have a card in front of you, you need to state your name clearly so that she can record it for the transcript. When it comes to public comments, we will bring around a microphone so that you can actually speak into the microphone and the folks on video feed and audio feed will be able to hear you.

So who you can see on the video right now is Dallas Burtraw who is joining us from Washington D.C., and Meredith Fowlie is on audio right now but will join us on video from time to time and she is in Missouri. We will introduce the members of the committee in just a moment, but for now I would like to turn this over to Matt

Rodriguez, Secretary for the California Environmental Protection Agency.

MATT RODRIGUEZ: Well, thank you Ashley, and let me start by thanking the members of the committee for agreeing to do this. I know it's a commitment of your time and resources, and we appreciate your willingness to step up and help us out here because you do perform a very, very valuable function. I had two thoughts as I was coming in to work today. One is -- and I'm sure the staff in CalEPA is tired of hearing that, but I will always fall back on my law school days and remembering the class where we were taught that any decision the government makes or any decision we make is only as good as the information we have available to us in making that decision.

And so as we're looking ahead and implementing our climate programs in the future, it's important to get input from a variety of perspectives and really make sure we understand the implication of our program and what effects they may have and so that's why it's especially helpful to have the expertise of this committee and the members of this committee to give us their perspective on how our programs are working and what we might be thinking about in the future and what impacts you see from these programs.

I think the other thing that came to mind -- and

I was mentioning this to the staff the other day as well, this reminds me very much of a meeting that we had back in 2012 right before we initiated the Cap-and-Trade Program. We met with a number of economists down at the Bren School in Santa Barbara because we were interested in getting their perspective on what was likely to occur with the implementation of the Cap-and-Trade Program -- were there things we should be looking for in terms of impacts, both in terms of reducing greenhouse gases and also impacts on the economy as well.

And I remember very clearly -- I have been the secretary for I think a little bit more than six months, but I was fairly new on the job and being interested to hear how complex the economic analysis is. There are just a number of factors that go into trying to predict the impact of a program on the economy and in addition to looking at the efficiency of the program, you have to look at the changes in your manufacturing centers. You have to look at the education. You have to look at training for your employment force. You have to look at external economic impacts on your -- on your state. And at the end of the day my take away from the meeting was that the economist said that "Well we can't really tell you what's going to happen, but we're going to write some really interesting reports in a couple of years." Which didn't actually fill me with a great deal of confidence, I was a little concerned about where we were going. But if somebody had told me back in 2012 that in 2018 we would be well on our way to meeting our 2020 targets, that we would have a plan for how we're going to meet an ambitious 2030 target, that we would have partnerships all around the world even governments that are working with us on climate change on the programs, that we would have a successful program -- Cap-and-Trade Program that had brought in billions of dollars to the state that could be invested in additional programs for reducing greenhouse gas emissions, and if somebody had told me that "Oh, by the way, you will move from 10th largest economy in the world to the 5th largest economy," I would have been very relieved.

So I think we find ourself in a good position right now. But we need to continue to reach out and get the perspectives of the experts such as yourselves, so we can plot out the future and look at what we need to do to make sure that we achieve our goals in the future and make sure that we're equally successful in achieving those goals while continuing to grow the California economy, to make the California economy the model that it is.

So no small task. But as I started by saying that's why I'm very appreciative of your willingness to work with us here to help us and give us your perspectives and we will look forward to working with you within the agency and the days to come. So with that I will turn it back over to Ashley and get it started for real now.

ASHLEY CONRAD-SAYDAH: So we'll actually jump in with introductions. We'll start with introductions for the committee members first and then go to everyone else. So Meredith and Dallas I think we'll turn to you first and make sure our connections are working. Dallas if you can get us started, please introduce yourself.

DALLAS BURTRAW: I'm Dallas Burtraw. I'm here in Washington DC today. I want to say hello to everyone and I apologize for being off campus today. I'm not there in person, but I have a good connection here and I can see and hear everything very well.

MEREDITH FOWLIE: I'm Meredith Fowlie. I'm on the faculty at UC Berkley but right now I'm on sabbitical in Zurich, and I am sorry I can't be there in person but will certainly be there for future meetings.

ROSS BROWN: Ross Brown with the Legislative Analyst's Office. I cover climate energy issues for the office and I look forward to working with the committee.

QUENTIN FOSTER: I'm Quentin Foster. I currently work with the revenue defense and I'm excited for this opportunity to serve on this committee and looking forward to working with EPA staff and fellow committee members to ensure that this program is working and that the environmental integrity of the program is preserved and moving forward. Thank you for this opportunity.

ANN CARLSON: I'm Ann Carlson. I am the Shapiro professor of environmental Law in at UCLA School of Law where I also direct the institute on climate change and the environment and I'm very happy to be here and looking for to working with all of you.

DANIEL CULLENWARD: Daniel Cullenward, I'm a lawyer and economist with a nonprofit. I also teach at Stanford Law School and look forward to speaking with you.

CHRIS TIEDEMANN: Good morning. My name is Chris Tiedemann. I'm the deputy secretary for law enforcement and counsel at CalEPA.

EMILY WIMBERGER: Hi, I'm Emily Wimberger. I'm the chief economist at the California Air Resources Board.

RAJINDER SAHOTA: My name is Rajinder Sahota and I'm assistant division chief at the Air Resources Board. I oversee all of the climate programs.

ASHLEY CONRAD-SAYDAH: Thank you. And as we go through public comment, we'll have an opportunity for you to introduce yourselves as well.

First, we wanted to talk about the meeting format because this is an all world meeting and we need to establish essentially the rules of the room for how we meet and how we interact. We have memos in the back and these memos include the legislative authority for the IEMAC that was laid out in AB398. So we put together a memo for consideration of the committee on how we get together and how we compose the annual report that's called for in the legislation.

So if you note on the legislative authority, it essentially tells us who should be on the committee -- at least five experts on the emissions trading market design and three of those appointees have to come from the governor's office and two from the legislature, so we've achieved that goal. The committee members have certain requirements. The legislation also tells us that at least annually we have to hold a public meeting and report to both the state board, meaning the California Air Resources Board and joint legislative committee on climate change policies on both environmental and economic performance of the regulation adopted by the state and other relevant climate policies. So this remains in effect until 2031. So the committee will meet annually and produce a report until that time.

Additionally the state board needs to actually work with the -- so the Air Resources Board has to also report to this committee if two consecutive auctions exceed the lower of the price containment levels established pursuant to an earlier legislation.

In terms of meeting format, all of the meetings of the committee need to be conducted according to the Bagley-Keene Open Meeting Act and that is a law that applies to many of our government committees. I'm actually going to move the agenda around a bit and give Chris time to talk a bit about the open meeting so we have those principals before we move forward with the agenda.

MATTHEW RODRIGUEZ: Thanks Ashley. I provided members of the committee with a short memorandum about the Bagley-Keene Open Meeting Act as well as a copy of the act itself. And generally the act embodies a state policy that when a multimember body is created by state statute, it exist to serve the public and, therefore, the public should have an opportunity to attend the meetings of the body and provide comments to that body. In order to do that, the act requires that there be a ten-day notice of meetings of any state bodies that are subject to its provisions and that there also be a ten-day notice of the matters that will be discussed at the meetings of the body.

A lot of the provisions of the Bagley-Keene Act, if any of you dove in and actually read it, make a little more sense when you consider the many types of state bodies created by statute in California including bodies such as the Air Resources Board or the State Water Board where they regularly make regulatory decisions and quasi-adjudicative decisions. And behind the act is a policy that those decisions should not be made in a back room, deals should not be being cut in the back room about those decisions and the discussions on those matters should occur in public even though the act might make more sense when considering those bodies, it does apply to this body. And there's some provision of the act that might not be intuitively obvious in the conduct of your business.

The main provision is the open meeting provision and that provides -- when the committee hears, discusses, or debates a matter within its jurisdiction or when a majority of the committee does that, it has to be in a publicly noticed meeting with the agenda posted in advance. And the reason I say that might not be intuitively obvious is for many of you, if you're serving on a panel that might have a charge that seems similar to this one in an academic context, what you would routinely do and what we routinely do when we serve in that sort of capacity other than on a public body is we have a conference call before the meeting of all the members to talk about -- "Well, what are you going to talk about? What you are you going to talk about? What are we going to do? How are we going to wind this up at the end of the meeting?" And that is something prohibited under the Bagley-Keene Act -- is prohibited if more than two members of the committee engage in that sort of discussion.

The act prohibits not only the actual physical coming together of a quorum of this body to discuss matters related to the committee's jurisdiction, it also prevents a conference call or video conference discussion of a majority of the members of the body about the subject matter of the committee. There's also a provision in the Bagley-Keene Act that prohibits what are known as serial meetings and serial meetings are not an actual coming together of a majority of the members of the board to discuss a matter within it's jurisdiction. They are instead a series of discussions between members of the board that are tantamount to a meeting of more than -- meeting of a quorum or majority of the board to discuss a matter within the jurisdiction of the board.

So if one committee member calls another and says, "I think the report should reflect whatever, would you call a third member of the committee and make sure that we're all together on this?" That is a prohibited serial meeting. The Bagley-Keene Act provides both civil and criminal penalties for violation of the act, so in addition to the fact that it's simply good public policy, there are penalties for violation of the act.

Some of the frequent questions that come up particularly in a panel of this sort, include "Well, what about attendance by a majority of the members of the committee in an academic conference where we discuss matters that touch on climate policies. And I direct you to Section 11122.5 of the act, which provides a series of examples of those types of things that are not prohibited. You can attend ceremonial or social gatherings with the majority of the members of the committee without violating the act. Of course, you shouldn't use that gathering to discuss the matters that should be discussed in open meeting. You can also attend conferences where you will hear about matters that touch on the committee's jurisdiction, so long as at that conference a majority of the members of the committee don't get together and talk about the subject matter of this committee which really is the report to the legislature and CARB about the climate policy.

The act does not prohibit communication with CalEPA staff about matters such as scheduling the meetings, the proposed agenda of the meetings, and procedural aspects of the meeting. We can communicate with all of the members of the committee and all of the members of the committee similarly can communicate with us. We would not engage in horse trading about what the substance of the report will be, but there's no prohibition of staff communicating with the majority of the committee members.

The act also provides that written material that is distributed to a majority of the committee members should also be provided to the public including material related to the committee's business. If material distributed, for instance, by a board member to all of the other members is related to an agenda item, we would typically post that on our Internet site with the meeting materials relating to agenda items.

If a member of the committee wants to distribute information to all members of the committee that doesn't directly relate to an agenda item, we will -- we would ask that the material be provided to us, we will make certain that it's distributed to all members of the committee, and we will also make sure that we comply with the act in making that material available for any members of the public who request to inspect the material.

Finally, I want to just say something short about the California Public Records Act. As members of this committee, you're subject to the California Public Records Act for any documents that you prepare, own, use, or retain that relate to the business of this committee. All of those records are considered public records and if a member of the public makes a request either to CalEPA or to you directly for those records, what we would typically do is ask you to provide us with the records including any such records that you keep on your personal devices including your cell phone. We review the records to determine whether any of those are privileged or otherwise exempt from production, and then we at CalEPA would take responsibility for producing the records.

And the reason for that and the reason I want to bring this up is if you get a Public Records Act request in your capacity as a committee member and fail to respond to it and someone goes to court to sue for failure to respond, there's a mandatory attorney's fees award if that person prevails and the award is the responsibility of the public agency, meaning CalEPA and not you, so we really want to know about those requests and have an opportunity to work through them -- work with you and make a proper response to the request. Both the Bagley-Keene Open Meeting Act and Public Records Act have just -- I don't want to say infinite number of complexities, but close to infinite number of complexities in their application and we're available when situations arise to provide advice on both acts and you shouldn't hesitate to get in touch with Ashley or with me if you have a question about either of those statutory schemes.

So if you have questions now, I can answer them or if they come up when we're discussing the process for future meetings, I'll be here and I can answer those. So thank you.

ASHLEY CONRAD-SAYDAH: Are there any questions from committee members?

QUENTIN FOSTER: Clarifying question for me in terms of what constitutes serial meetings. Does that also constitute one on one communication with an individual who is also serving on the committee? So for example, a phone call to one committee member, two phone calls to another committee member, what does constitute serial meetings mean?

MATTHEW RODRIGUEZ: No, one conversation is not a serial meeting because it doesn't involve a quorum, but you still have to be careful with those sort of communications because if you engage in a one to one conversation and the person you're talking then proceeds to call another member of the committee to pass on that information, it could be a prohibited serial meeting. So that's the type of thing we're -- we advise caution and you might want to ask us the specific question if you have a specific problem.

QUENTIN FOSTER: Thank you.

ROSS BROWN: Question, maybe this kind of gets into some of the later agenda items for the meeting, but I think sort of the term kind of within the subject matter jurisdiction of the committee and sort of the discussion of any of those items given that the legislation is somewhat broad on what the committee should be looking at, I guess I'm curious about, kind of, examples of types -- I mean for example, you know, I'm curious on is there any information on program X or Y or Z that the committee members have as sort of requesting that type of infor -- you know, are they aware of analyses that have been done? Is sort of request of that nature, you know, would that be kind of considered a discussion within the subject matter of the committee?

Similarly, I guess, you know, if I was interested in just, sort of, several committee member's thoughts on the analysis that was done by a particular organization. For example, even a methodology or something like that. I mean are those types of discussions all kind of subject to all of the requirements that we're talking about here.

MATTHEW RODRIGUEZ: That's a good question. In a stricter sense, at least the way I read the statute, and secretary or lawyers -- so you can weigh in -- but the jurisdiction subject matter that this committee is charged with is the report to the legislature about these policies, and if you are communicating with the other members of the committee for purposes of reaching an opinion for a report about these policies, that's a prohibited meeting. I understand that the committee members work in the field of climate change and I think it's too broad to conclude that any time the committee members speak with one another about general matters related to climate change, that's a prohibited meeting under Bagley-Keene.

But if you're doing it with the purpose of reaching a conclusion about the report to the legislature, that's a prohibited meeting. And as far as the criminal penalties under Bagley-Keene, the statute provides that a violation of the act with the intent to deprive the public of information that the public is entitled to is a misdemeanor. So if you're, for instance, talking at a conference about, you know, general planet-wide climate policies, it'd be very hard for us to tell the members of the committee you can't do that I don't think anyone would serve on the committee if we were to do that. But if you're really contacting more than one other member of the committee to get your ducks in the row regarding the report to the legislature that's a prohibited meeting.

So I don't know that I am being that clear but that's really --

ROSS BROWN: Yeah, I think it's still a little bit blurry sort of in my mind about kind of where to draw that line, where you're just chatting generally about climate policies versus forming an opinion for the purposes of the report. So I guess just in more -- I mean, we can sort of have further discussions on specific items as they come up sort of along the way, but I guess that's just my overall question.

MATTHEW RODRIGUEZ: And, again, you can always call us for specific advice about a specific phone call that you want to make.

ASHLEY CONRAD-SAYDAH: Yeah, I think a number of committee members had asked about existing relationships. You all work together, contact one another, and have these existing relationships, and many have asked can they continue those business relationship, continue to publish together, continue to reach out to one another to ask questions on these broader topics. So that was where a lot of -- I think I heard it from every one of you, that question.

MATT RODRIGUEZ: I'll just say one I don't want to and shouldn't be and continue be the attorney for the committee and I think Chris did a very nice job of summarizing the law on all of this. My observation here is that on its face the statute seems to provide for an event for a broad inquiry by this committee and to the climate programs, how they are working, and economic impacts and their efficiency.

On the other hand, the actual role of the committee is relatively narrow in the sense of a report --

coming up with a report that would be going to ARB and to the legislature or the legislative committee. So as Chris was suggesting it's really that work on the report, that legislative report and that discussion you would be having on that report that would cause issues about Bagley-Keene and that sort of thing.

But in general you are here because you have some pre-existing knowledge of these programs, how they work, the effects on the economy, but your participation in this committee shouldn't inhibit that continued work. In fact that's one reason why we're interested in your perspective. But we will be finding that balance, but I think Chris identified it's your -- let's look at your jurisdiction and and your conversations related to that report and what you would say to the legislature in your role as a member of the committee is what we would be looking at as we're looking at applications in the Bagley-Keene Act.

CHRIS TIEDEMANN: Yes.

MATTHEW RODRIGUEZ: I'll stop being an attorney.

ANN CARLSON: So I gather this is true of email communication for self-editing report? You can't have serial comments on our report?

CHRIS TIEDEMANN: Yes, that's correct. And part of the reason that Ashley and I discussed moving my comments ahead in the agenda is we'll get to that when we're talking about the process for a report because when we talk about that the Bagley-Keene Act presents some difficulty, because it definitely does encompass email communications and decisions that might be made by the majority of the committee about editing the report or final -- you know, what the final record should look like. So I think we will get into the particulars of the next agenda item.

ASHLEY CONRAD-SAYDAH: Just checking in with Meredith or Dallas to see if you have any questions or comments.

DALLAS BURTRAW: I heard that clearly and I think I understand, thank you.

MEREDITH FOWLIE: I'm with Dallas also. I may have questions later on as we get into the particulars. Thank you.

ASHLEY CONRAD-SAYDAH: Okay. Great. And because we moved an agenda item and completed it, we actually have an opportunity for public comment. If there are any members of the public who wish to comment on this item, please raise your hand and we will bring you a microphone.

Okay, seeing none we'll continue with agenda item Number 2 and talk about the meeting -- continue with the meeting format. So we discussed the fact that these meetings and discussions must be conducted according to the Bagley-Keene Open Meeting Act.

Now we'll talk generally about the meeting format. So we planned to arrange presentation to the IEMAC for each of our meetings on California's climate policies, including publicly available environmental economic information that indicates the performance of those policies, and, again, the publicly available pieces are pretty important. The committee will not be privy to information that the public wouldn't otherwise see or hadn't already seen.

At the meetings committee members will have an opportunity to comment on the presentation, ask questions of the presenters, and on the environmental economic performance of the Cap-and-Trade regulation and other relative kind of policies. The public will also have an opportunity to comment. So to run the meetings and to make sure that the committee members all have an opportunity to weigh in and the public may weigh in, we are recommending that you all select a chair and vice chair and the chair will run the meetings and facilitate the meetings. If the chair is not present the room could elect for a vice chair to facilitate the meeting.

We're suggesting this would occur by vote and we can do another vote as necessary. So there would be no established term for the chair, it would be voluntary and should we change the chair, we could have another vote. We will also have a court reporter present at each meeting, and the court reporter will prepare a full transcript and that transcript will be available online as soon as it becomes available to CalEPA. Are there any questions on simply the meeting format? Okay great.

So importantly let's talk about the report, and this is the deliverable that we're responsible for as part of the legislation. So to facilitate the report what we plan to do is upload the transcript to the website that we've established as part of the CalEPA site and upload a summary as well of that transcript. So Bill, who's in the audience, is a staff member of our climate program and Bill will be taking the transcript and your comments here today and creating a summary report, so that if someone want to get sense of what happened in the meeting, they don't need to read through the full transcript.

That summary report will also be available to all of you members and each of the members will have an opportunity to provide comments to that report, add additional items and additional comments and we will bundle that all together and make that available potentially if that's what you all agree to. That compilation will be the report that could be submitted for your annual report. If you choose a different approach, we can discuss that today. But essentially what we're looking at is it would be an opportunity for the legislature and air board to look at your comments and to weigh your expertise on the policies that we're discussing today and to see that in a compiled format. There are obviously other opportunities that you may or may not want to suggest for the committee. That's the CalEPA staff suggestion and we're interested in your feedback on that approach.

ANN CARLSON: So I guess my initial reaction to that is that seems like a great and bare minimum, and so I appreciate that we get some restrictions that we operate under because of Bagley-Keene. I appreciate that we're limited to that, but I hope we will have the opportunity to do a bit more than that. I guess that's my initial reaction to it, is that maybe in the first round when we don't have a lot of time that might suffice, but I would hope that we could get a bit more in depth in writing on particular issues that we think probably need more than just comments.

ASHLEY CONRAD-SAYDAH: So along those lines -- and I should -- I should mention that Bill himself is an economist so when he puts his summary together he will have expertise in doing that work.

So in thinking about how to go beyond the bare minimum and potentially dig in on some of these details and being mindful of the Bagley-Keene Act, some of you have suggested the idea of putting together subcommittees to discuss particular items might be necessary. So depending on what we hear in the presentation and the type of feedback, if you do want to establish some subcommittees, you would do that in groups of two to avoid this -- to basically comply with the open meeting act. So if that's something you desire as we go through our presentations today or as we continue to work, we can do that, but it needs to be established in the public meeting not outside the public meeting.

QUENTIN FOSTER: So then we would be deciding that today?

CHRIS TIEDEMANN: Well, you can decide that today or you could decide to establish subcommittees at any future meeting, a subcommittee of two if there's a particular task that you want to assign to such a subcommittee. You can establish a subcommittee of more than a quorum of the committee, but the problem with that is those meetings are subject to the Bagley-Keene Act and they have to be publicly noticed and agendized and held in the exact same manner as the meeting that's being held today.

QUENTIN FOSTER: Thank you.

ANN CARLSON: If, for example, a subcommittee of two were to prepare a report, I assume that in a public meeting a third member of the committee could then comment on the report or make their comments public that way. Is that the way you're envisioning it?

ASHLEY CONRAD-SAYDAH: Yes.

ANN CARLSON: Thank you.

MEREDITH FOWLIE: Just one more clarifying question from Meredith on the phone. I would assume with this meeting format that the -- to make sure that the transcript and summary was substantive we get materials well in advance of the meeting. So one could imagine, you know, identifying issues, distributing materials, and then forming subcommittees to prepare comments at that meeting just to facilitate the process of subcommittees preparing comments and other members commenting publicly or responding publicly.

ASHLEY CONRAD-SAYDAH: Yes, we have to get materials on the website at least ten business days before the meeting, but there's nothing saying we couldn't get those meetings up and publicly available well in advance of that ten-day limit.

MEREDITH FOWLIE: Thank you.

ASHLEY CONRAD-SAYDAH: Okay, well if -- oh, more questions?

DANIEL CULLENWARD: No, I just -- I mean we can get into this in the particulars. But again, I think the ability of this committee to operate well is going on the contingent on having the ability to transmit public information in a public way during and in between committee meetings. Even if there are subcommittees, I think it's very important for the primary documents and the reports that are considered by subcommittees to be made available and to be made available as widely as possible, so I hope that would be a consideration for the committee moving forward.

ASHLEY CONRAD-SAYDAH: And we will get into the particulars as we hear the presentation later and have that discussion.

CHRIS TIEDEMANN: I just want to clarify one thing that might be obvious to everyone in this room but that is if a subcommittee were to take upon itself a particular portion of the report, it can prepare a draft of that report. But it cannot be a committee report without discussion of it and approval of it by the entire committee or a majority of the committee and a vote of the committee in a public meeting.

DALLAS BURTRAW: I have one additional question for clarification. If we have a committee of two persons who are working on some subtopic and that's been all decided on at a public meeting and it's publicly noticed and another committee member wants to send over the trans of recent work that he or she may have done or paper he or she may have come across to that subcommittee for their consideration could that sort of one way input to the process of the deliberation of subcommittee? Would that be allowed?

CHRIS TIEDEMANN: No. No -- well, that would be allowed but all of that material would have to be distributed to the entire committee because there's a provision of Bagley-Keene that provides if written material is distributed to the majority of the committee, it's supposed to be distributed to all members and made available to the public for inspection.

DALLAS BURTRAW: So to follow up then for topic or for any subcommittee we may have, if one of the committee members came across the materials that they wanted to share with any of the committee they would have to share it with all the committee, but they could do so and then the ARB staff or someone would also receive that information and put it in the public record.

CHRIS TIEDEMANN: We would ask that the material come through CalEPA, and we would distribute it to all committee members.

DALLAS BURTRAW: Thank you.

DANIEL CULLENWARD: Just to clarify really quick but I think Dallas was asking the nature of the question I was trying to get at. I think it would be very important for us to have a mechanism that transmits that information publicly for the entire public to see in order for the subcommittees to work well and for the full committee to stay apprised on what's going on between the meetings.

ASHLEY CONRAD-SAYDAH: Duly noted, thank you. So with meeting format I'm sure we will get into some of these discussions later after we hear the presentations and we'll have an opportunity to figure out how we want to do work on the report as we move through the meeting. But for now I think I just want to talk a bit about the schedule and then we'll move on to talk about the positions of chair and vice chair.

So the meeting schedule, we will hold meeting of the committee at least annually. Committee members may be compensated or reimbursed for travel expenses, but not compensated for their time. As noted if we have request for another meeting or if we need to meet again, those meetings have to be noticed at least ten days in advance and held in a space where the public can join us so that will necessitate obviously work on behalf of CalEPA to make sure that can happen.

Our next meeting so far is scheduled for September 21st, it's a Friday. We will determine the best timing for that after we see the duration of time after today's meeting.

Are there any comments or any additional comments on the proposal for how the process of this committee works? Any other questions?

Okay, so we will move on to the selection of the of the IEMAC chair. In this case we would like nominations for a chair and this is essentially a vote where we would need a majority vote to reach consensus on the chair. You, Ross, actually asked a question about being a voting or nonvoting member and we had said that as a representative from the legislative analyst office he could abstain or join in on this chair vote. So it's entirely up to you how you join us.

Okay, do we have any nominations for chair or any comments on the -- what qualities the chair should possess?

MATTHEW RODRIGUEZ: If you don't mind, Ashley, it's entirely up to the committee whether they elect a chair and how they proceed. But you can see just by the way this meeting is being conducted, the role of the chair. If you don't have a chair and somebody in the committee is sort of running the meeting, then you will be falling back on the CalEPA staff. We are more than willing to perform that role and call on people in the audience, but generally with the committee it's appropriate to have somebody in the committee actually run the meeting of the committee rather than having the staff do it. But you do have that discretion. We can continue the way you see thus far or you can elect a chair and have that chair sort of be the head in controlling the tempo and who gets to speak and the order of speaking and controlling the agenda. So I just want to make that observation.

ANN CARLSON: So I have a lot of experience with one person in the -- not actually physically in the room but on the committee who I have co-chaired something with them and I happen to know he has excellent skills at chairing and that is Dallas Burtraw, who I think is kind and patient and organized and so I would like to nominate him to serve as chair.

DANIEL CULLENWARD: I'll just say as a preliminary matter I think the chair is a great idea and I'll be glad to second Dallas's nomination.

MEREDITH FOWLIE: Yes, I was going to offer if there wasn't, but yeah, I third.

ASHLEY CONRAD-SAYDAH: Is there any opposition to Dallas being the chair of the committee? What about from you Dallas? Any opposition?

DALLAS BURTRAW: Just trepidation, thank you.

ASHLEY CONRAD-SAYDAH: So if there are no objections then I guess we just need an affirmative "aye" or yes from all of you that this is the chair you select.

DANIEL CULLENWARD: Aye.

ANN CARLSON: Aye.

QUENTIN FOSTER: Aye.

ROSS BROWN: Aye. I'm going to abstain -- this is Ross, I'm going to abstain as actually mentioned. I think just as a general matter just sort of given our office's role in the process -- legislative process, I think I'm going to for the most part just not vote on any of the items, but this is not a reflection on Dallas or thoughts on him, but this is sort of an ongoing matter. Thank you.

ASHLEY CONRAD-SAYDAH: Thank you, Ross.

Dallas do you accept the role of chair?

DALLAS BURTRAW: Yes. Thank you very much everybody.

ASHLEY CONRAD-SAYDAH: All right. We do -- we don't have to select a vice chair. We added language that said if the chair was not present, there could be a vice chair to run the meetings. Of course, we're faced with that situation today so we can either select a vice chair or have staff continue to facilitate. That's really up to you all. So if anyone has comments on the selection of vice chair or ideas about that, please weigh in now.

DALLAS BURTRAW: Well, in the future I expect to be in the room for all meetings. The scheduling was so short on this one, but I think in general, it'll be really wise to have a vice chair, so I think we should move to have somebody in that role.

ASHLEY CONRAD-SAYDAH: Any other comments on having a vice chair or not having a vice chair, and also you can just move on to nominations for a vice chair if that's what you would like to do.

QUENTIN FOSTER: I would just add my agreement with Dallas that having a vice chair will be helpful as well.

MEREDITH FOWLIE: I was just going to add I agree with a vice chair and my suggestion would be if Ann and Dallas had worked together in the past, that would be -- I have lots of confidence in both of them, I would nominate Ann Carlson.

QUENTIN FOSTER: I would second that nomination.

ASHLEY CONRAD-SAYDAH: Are there any objections to having Ann serve as vice chair?

Ann, do you have objections?

ANN CARLSON: I don't.

ASHLEY CONRAD-SAYDAH: Okay. So just through an audible yes or affirmation, if you could all please weigh in -- or no, could you all please weigh in on having Ann as vice chair, please?

DANIEL CULLENWARD: Aye.

QUENTIN FOSTER: Aye.

MEREDITH FOWLIE: Aye.

DALLAS BURTRAW: Aye.

ASHLEY CONRAD-SAYDAH: So we have selected Dallas Burtraw as chair of the committee and Ann Carlson as vice chair of the committee. And just to close out this item, I'll finish this off and then we will pass the mic along to you to facilitate comments after Rajinder's and Emily's presentations. Are there any public comments on the selection IEMAC chair?

Okay. So we've actually done very well with this. I'm sure there'll be many more questions on the format of the report and how we all work together in the future, so please feel free to bring those up, but for now we would actually like to turn over to the largely substantive discussion with an overview of California's climate policies with the focus on the Cap-and-Trade Program and we will be hearing Rajinder Sahota and Emily Wimberger today and they are colleagues from the California Air Resource Board. So I just need to get the presentation up and then we'll get started.

RAJINDER SAHOTA: Thanks Ashley. And good morning everyone and thank you Secretary Rodriguez for the invitation to be here to present at the first meeting of IEMAC. Both Emily and I have separate presentations and so I don't know if you want to have comments until after both presentations are completed or if you want to have comments after each one. I'll defer to you.

ANN CARLSON: Rajinder, I'm going to need help from IT to make sure this is working, so if you want to get started with the paper presentation, I can get some help.

RAJINDER SAHOTA: I believe there's paper copies in the back for folks in the room if you don't already have a copy. And my presentation is titled 2017 Scoping Plan Update and Scope of Current Cap-and-Trade Rulemaking.

So I start with slide two which is really about getting the lay of the land for California and greenhouse gases, and what we're trying to do overall in the state. So the second slide is the GHG emissions inventory. It lays out --

DALLAS BURTRAW: May I interrupt? The remote presentation isn't coming up even though the screen is there --

ASHLEY CONRAD-SAYDAH: I sent the PowerPoint through to you and Meredith this morning. We're working on an IT issue to bring it up right now. If you have the PowerPoint with you look along with that and I'm trying to get them to come and help us out.

DALLAS BURTRAW: In the meantime if that doesn't work if you could put the meeting camera back on to the full screen, it will make it easier to see the full space.

RAJINDER SAHOTA: Okay. So back to slide 2, Greenhouse Gas Emissions Inventory. What we see here is the 2015 total emissions by scoping plan sector. You can see which sector's contributed the most greenhouse gases in the state's inventory, transportation is by far the largest sector. And if you look at refining and extraction which are about half of the industrial sector, transportation, for an extraction, processing, and then eventual combustion of those fuels out of the tailpipe accounts for almost 50 percent of the state's greenhouse gases.

The other sources include electricity both generated and imported because we do import a significant amount of electricity in the state. Agricultural, commercial and residential home heating, cooling and water boilers. And then high global warming gases at recycling and waste make up the remainder of the state's inventory.

In 2015 the state's total inventory was 440.4

million metric tons. For reference the 2020 target is 431 million metric tons. One piece that's missing out of the state inventory and is tracked separately is the natural working lands. And so these sectors are the four sectors, wetlands, grasslands, et cetera, they vary by complex biological systems and there is separate work underway to try to better quantify and understand the GHG fluxes from those systems. But for now those are kept separate from the energy, industrial and transportation, AB 32 scope inventory.

As we look at the inventory and the sectors you see here, I think it's important for me to note that as we think about greenhouse gas regulations in the State of California we don't have just one policy for each sector. We have in some cases several climate policies and then also air quality related policies for these sectors. I'll use transportation as one example here. So for the transportation sector we do have large regional state implementation plans for air quality purposes which are meant to reduce the smog and toxic emissions from the transportation sector. Those also get co-benefits in greenhouse gases and we also have other policies that are direct climate policies such as the carbon fuel standard and cap-and- trade program and advanced clean cars, which is about getting more cleaner technology on the roads.

So as we think about all of these sectors, it's important to remember that there may be several policies and not just climate policies that are interacting with the emissions in that sector over time. On top of that we have to recognize that there are different levels of regulations for these sectors. We may have federal policies, state laws, and local laws that actually influence emissions from those sectors over time. So as we work there, you know the work at ARB, we are trying to harmonize our air quality and climate program to the extent feasible to make sure we're maximizing all benefits under these policies for these different sectors. Recognizing that there's going to be some federal interaction and some local interactions and local mainly on the stationary sources.

Slide three provides an overview of how we have been doing on reducing emissions and the economy. So what we see is the carbon intensity of the California economy is declining. It has a 33 percent decrease since the 2001 peak. The California economy has grown, the GDP is up 37 percent during that same period. And there's a good story here, that while our economy has continued to grow, it has become less carbon intensive. But it doesn't mean we can take a step back and rest. It just means that the way we have been designing our programs, the way that we have been implementing the program has actually allowed the economy to grow while we made progress on decarbonizing the economy and making progress towards our state targets.

Specifically on greenhouse gas emission trends slide 4 lays out the emission trends from 2000 to 2015. So what you see in the yellow line is the greenhouse gas inventory and you can see where it dips around 2008, 2009 and that was the great recession. And you can see that it's been steadily hovering just above the 2020 target in recent years. The teal line, the shorter line from 2012 until 2016 is actually reported data directly to the State of California, to ARB under our GHG mandatory reporting regulation. These are emissions data reports that are submitted annually and verified by third party verifiers and they represent a significant portion of the statewide inventory, but not all of the statewide inventory.

This data is available several months ahead of the inventory getting posted. So what you see in 2016 is a -- is a noticeable decline in the reported emission for the state for 2016. When this data was released in November of 2017, we identified some sectors that actually saw significant declines in greenhouse gas emissions. Part of that was the electricity sector, we saw pole plants and we saw carbon pricing introduced into the dispatch and the CAISO Energy Imbalance Market and in balancing authorities throughout the states, which meant that having a carbon adder in the dispatch system made removables more favorable for dispatch or a fossil when fossil has a carbon compliance under the cap-and-trade program.

The line towards the bottom -- it looks purple on the screen -- here might be a dark blue for everyone else and that is really the emissions per capita and those are also decreasing. The population is continuing to grow in California, but the emissions per capita are decreasing just the same as we saw for the economy. So in all we are seeing really good indicators that our programs are starting to deliver some real emission reductions across the state. And so we are actually on track to achieve the 2020 target before 2020. Our scoping plan modeling that was put out with the development of the scoping plan last year actually has us below the 2020 target in 2020, and that's our forecast. Obviously we'll have to see what the reported data shows and the inventory shows year after year, but the modeling itself, the year term model shows that we are on a steady decline through 2020.

So there are some key metrics when we think about tracking progress. With a suite of programs throughout the state and separate levels of programs at federal, state, and local levels, I thought I'd focus on some of the key metrics. Some of the metrics that we spoke to are included in the scoping plan executive summary.

Obviously we were talking about meeting the state's target, we were talking GHG inventory, it actually parses out emissions by sectors, so you can see how different sectors are performing year after year. On top of that we also have production data for specific sectors. Not only does ARB collect production data but some of that production data is actually made available through federal resources and so you actually can see changes in cement clinker production, for example, before we even post some of our GHG emission data in the state. So there's a suite of information not available at ARB but also on other websites, the federal websites.

The other information that is worth tracking is weather patterns. We all know in biohydro years, we need to generate less fossil power, but it's worth noting that even during the period of significant drought in California, we made progress in decarbonizing electricity sectors. We noted in the scoping plan executive summary that our three largest IOUs are on track to meet the 50 percent RPS almost a decade earlier than mandate by the Statute. So it's not just the hydro patterns that are influencing the progress we're making there, we do have evidence that our policies are actually driving emission reductions even when the weather may not be cooperating or working towards what we need to do.

The other metrics that we track are seen on previous slides, there's the tonnes per million GDP, volumes of renewable fuel such as the increases in bio fuels renewable diesel, a lot of that is driven by implementation of a low carbon fuels program. There's also data on the penetration of zero emission vehicles and efficient medium and heavy duty vehicles. Both metrics are tracked as part of Advance Clean Car Program and as part of our local source strategy.

There's information available on other state agency websites such as CEC, the California Energy Commission related to the growth of specific renewables in the state and there's energy demand data that is posted on the Energy Commission's website. So it's not just ARB that holds all this data, it's held at a variety of state agencies and even on some federal websites. And it's important to recognize that there is a bulk of information out there as you're looking at changes in California.

Slide six is really about the 2017 scoping plan. The scoping plan is actually a blueprint that was adopted in December 2017 for how the state will achieve the SB 32 target, 40 percent below 1990 levels by 2030. The main programs and policies are listed on the slide and their relative contributions to the estimated emission reductions that we need to make from a business as usual scenario.

So what you see is there are some existing programs, such as the renewable portfolio standard increased to 50 percent, bio fuels measure, which was the low carbon fuel standard. It's currently at a 10 percent CI so we propose a scoping plan to shift that to 18 percent. There's energy efficiency measures, those are driven by SB 350 which calls for at least -- or a double in energy efficiency savings by 2030 from current levels. There's the short lived climate pollutants programs, which is about high-global warming gases, fugitives from dairies, and it is a relatively new program. It was enacted under AB 1383 pollutant plan put together by Senator Lara and again he's also on our board as a member.

The last measure is the Cap-and-Trade Program that is an existing program, and after AB 398 had passed and signed by the governor last year. It includes a role for the Cap-and-Trade through 2030. The Cap-and-Trade Program itself is listed together about 38 percent of the emissions reduction needed to achieve the 2030 target and the other measures together would contribute about 62 percent.

The mix of measures, again, represents existing measures and new measures and some of them actually have been around for much longer than some of the others. For example, the RPS program predates almost every other program on the chart there. The mobile source strategy which is driving clean fuels and technology and freight. It's important to remember that that is really part of our state petition plan for air quality and we're leveraging the work there to get gas benefits for the transportation sector.

So, again, recognizing that we have existing purpose at ARB we're trying to leverage all of them across the multiple pollutant areas that are a concern to the state and looking to extends some of the programs that we believe have been successful in helping us achieve our progress towards 2020.

Since the plan was just adopted in December 2017, we've actually started making some progress on the measures of the plan. For example, low carbon fuel standard regulation was recently heard at our board -- the first of two board hearings, and instead of just sticking with the 18 percent CI increase from the current 10 percent, we are advocating and have proposed that it go to 20 percent in 2030. The final board hearing for the LCFS is scheduled for, I believe, September of this year. And so it is coming back to the board for our final vote and that should have the CI values and how those will increase over time on schedule to the 2030 target.

Under SB 350 there was a requirement for integrated resource plans. Like I said earlier, data suggested that the three largest IOUs achieve 50 percent RPS by the end of this decade. That's ten years ahead of the SB 350 mandate. The IRP plans are really about taking all the different measures that are encompassing the electricity sector and putting them under one collective comprehensive plan that would be developed by each utility in the state. That is an ARB board item. It is being developed in concert with CEC California Energy Commission and California Public Utilities Commission that is going to our board in July for a single hearing. There's a draft of the report posted on our website, and also I think a handful of comments on our website for more information.

There are mechanisms underway to identify how to reduce vehicle miles traveled. The transportation sector, again, has a suite of measures on it's own. You've got measures for air quality purposes. You've got zero emissions vehicles program, low carbon fuels program, but a significant portion in the scoping plan is to reduce vehicle miles travelled, and we do have SB 375 which is about sustainable communities and planning for other mobility choices than individual passenger vehicles.

There was a gap that was identified in the scoping plan and that is that we want to try to achieve 40 percent reduction in BMT from BAU in 2030 and so work is underway with state agencies to try and close that gap to make sure that we're able to achieve the 40 percent. And then there's work that continues on measures such as short-lived climate pollutant strategy. There's been a suite of discussions on the oil gas sector if you emissions there, there's community updates and hearings all this year. There's also been community meetings on the dairy digester program and several workshops here at ARB on the high global warming potential gases that are a concern.

So as you look at this, what we see is some measure that are proposed to be developed, and designs to be a bit more stringent than what we had in the scoping plan, and then there's a couple of measures like the third measure on BMT where we're still trying to identify how to close that gap. And then you have the last measure which is really about SOEPs. And the first three interact directly with the Cap-and-Trade Program. The last measure, the last bullet is about measures that are outside the scope of the Cap-and-Trade Program.

So I know when people think of Cap-and-Trade they think it's the be-all end-all of the state's climate policies, but it actually isn't. There are significant emissions that are not covered by the Cap-and-Trade Program that also need to be addressed if we are to achieve our 2030 target.

Which leads us to Cap-and-Trade program. Most everybody is somewhat familiar with the Cap-and-Trade in California or has directly been involved in some way. It's an economy-wide program. It's economy wide and that it covers most of the industrial, energy and transportation sectors, not high global warming gases. It has a steadily increasing auto auction floor price to create an economic incentive for investment in cleaner and more efficient technologies. The total emissions to be delivered by the program are uncertain as those ultimately depend on the performance of the complementary measures, economic growth through 2030, and other factors.

And I think this is important because on the previous bar chart you saw the Cap-and-Trade program identified to deliver about 38 percent of the total reductions needed to achieve the 2030 target, well that's under one scenario. Depending on how the other measures do in the same sectors that are covered by the Cap-and-Trade Program, it may need to deliver more or may need to deliver less in helping us achieve our 2030 target.

Another thing that's worth noting is that the scoping plan is a path to 2030. That doesn't mean that new measures or additional efforts can't be put into place for the some of the same sectors. So the 2030 scope -- or the 2017 scoping plan is -- it's not the final word on all the programs that we need to hit 2030, it is what we are proposing today and it doesn't preclude any other state agency or new legislation from being enacted to actually ask for other types of action in any of the sectors that are under the scope of AB 32.

So this year we are undergoing a rulemaking on the cap-and-trade program itself. There's a couple of pieces of direction that are driving the staff process here. The first is the board resolution 17-21. In July 2017 the board directed staff to continue work on specific post-2020 allocation topics. The first one is really about transition assistance, legacy contracts. These are speaking to contracts between generators and power purchasers where the legacy contracts may have been enacted before a carbon price was known or reasonably expected to be known and there's no way to actually pass the cost for a carbon pricing mechanism back through the process.

There's also the waste-to-energy facilities. These facilities have been exempt for the first and second compliance periods. But beginning in 2018 these facilities would be subject to the Cap-and-Trade Program and will have to have a compliance obligation where they are required to procure some allowances and turn them in for compliance.

I'll just flag that waste-to-energy is something that's kind of a high concern to the justice community, and so they are very concerned about the emissions, the air quality emissions generated by these facilities, and ultimately it was a lot of their concerns that weighed with the board in deciding that waste-to-energy needed to be fully in the program and basing the carbon signal under the Cap-and-Trade Program.

The last piece is the allocation, and this is about the mechanism and regulation to provide free allowances to industry to minimize for leakage. There's a couple of features in the allocation methodology. Cap adjustment factors are one of those features. The cap declines at a certain percentage year after year, this is the annual budget for Cap-and-Trade Program. Cap adjustment factors decline the same percentage year after year. Some sectors, just where you may have high process emissions over 50 percent and you're in a high category of emission trade exposure, we give you half cap adjustment factor as part of the allocation methodology. And so we went back to look at those to see if it was appropriate to continue that for those few limited sectors.

There are discussions that we have been having and that have been put in public comments that the natural gas sector should also get a different cap adjustment factor, so we're continuing to have those discussions publicly. And then the last piece is the assistance factors. So when you think about the allegation methodology, the assistance factors are really based on what is your potential for the leakage. So we have three categories in regulation, it's high, medium, and low. An assistance of a hundred percent means that you're in a high category for leakage and that you face no additional reduction in your compliance obligation -- or no additional reduction in your allocation -- free allocation of allowance.

Now a hundred percent assistance factor does not mean that every company gets all the allowances they need for free. The cap adjustment factors are still in the equation and so you're still seeing about a four percent decline in your allocation year after year. And when we did an example and we held output to today's levels, what you see is allocation to the industrial sectors under a hundred percent assistance factor is reduced by almost 50 percent by 2030. So it is a significant drop in allocation year after year. There is a piece of AB 398 that requires the board, ARB, to prepare a report on is what we're providing to allocation sufficient to minimize leakage, is there anything else we should look at. And I think that report is due 2025 to the legislature.

The most important piece of direction that we have is AB 398 and it adds a few features to the program. The first is a price ceiling. We don't currently have price ceiling in the program, AB 398 without a price ceiling, and it would have two price containment points.

Just for reference the current Cap-and-Trade Program has three tiers in its reserve and the three tiers can almost map back to the concept of two price containment points on the price ceiling. Except in AB 398 if you hit the price ceiling we would have a value in the regulation. At that value for compliance California entities pay on a ton per ton basis and then ARB would be responsible for ensuring the integrity of the program by finding those tons elsewhere. It's not clear, you know, if you hit the price ceiling, it means you can find those tons in the sector that are covered. Are you looking at the biological sectors? Are you looking at the geography of the state? So that's an ongoing conversation.

There's also the treatment of unsold auction allowances. Currently the regulation has a mechanism that if there's low demand at an auction and some allowances are unsold, they are removed from the market until two consecutive auctions are fully subscribed at prices above the full price. We did have a period of low demand for allowances for a variety of reasons in 2016, early 2017. This mechanism that exists in the regulation would actually remove almost 40 million allowances right now to move into the reserve. That provision was codified in AB 398. So it codifies an existing mechanism in the Cap-and-Trade Program.

And then there's a requirement on offset usage limits. The current offset usage is 8 percent. That would drop to four percent for the first half of the decade and then six percent for the second half of the decade, and then there's a call for differentiation of offsets. Those are the direct environmental benefits to the state and others. And right now we're working through the public process to define what direct environmental benefits to the state means. Obviously, if it's an offset it's getting greenhouse reductions, but we're looking beyond greenhouse reductions to understand what other air pollutant reductions represent a direct environmental benefit to the state or avoidance of harm to the state's water.

So not every offset qualify for direct environmental benefit. There's two things going on here, first is the redirection in the offset usage limit. Second is for the differentiation that only half of those could be something that do not provide a direct environment benefit to the state. Offsets provide cost containment in the program and so this is a feature that is going to be reduced to some extent for the next decade. And then there's also direction in AB 398 about the post-2020 allocation assistance factors. The legislation assessed the assistance factors at a hundred percent from 2021 through 2030.

The question that we're grappling with under the resolution is the third compliance period that is 2018, '19, and '20. Do you set those at a hundred percent as well or do we go ahead and let the medium category drop from 100 percent to 75 percent and the low risk category drop from 100 to 50 percent? And so we have some information that they put out in a public workshop and it calculated or estimated that if we did not make a change to the regulation and those assistance factors fail in 2018, '19, and '20, the cost for compliance more than doubles for the industrial sectors that receive allocations right now.

And then there's section AB 390 that talks about evaluations which could lead to potential changes and those are related to banking rules. And other concerns are overallocation, which is there's some unsold allowances in the program from the current period, from 2013 to 2020. If those are pushed for post 2020 and given the caps in 2020, will we have too many allowances in the system to where the carbon price and steadily increases carbon price would no longer be supported and we will see meeting of a carbon price signal. And so that is something that we're continuing to look at in our public process.

In all this we have been trying to lay out the general principle for our approach to current rulemaking. We want to continue to market design for a steady, predictable, increasing floor price, with declining cap, to prompt the investments and actions needed to achieve the mid- and long-term GHG reduction goals for the state. In the scoping plan process we looked at Cap-and-Trade, we looked at cap and decline, a carbon tax, prescriptive regulations, a suite of policies that included the Cap-and-Trade Program that includes the features in that first bullet was determined to be the most cost effective way to achieve the 2030 target.

So we were really trying to reserve feature of the program that make it cost effective. We want to make sure the carbon price signals conform to legislation and maintain the integrity of the pre-2021 period of the program. So having some kind of right cutoff between 2020 and 2021 doesn't seem to match with how industry operates, how business decisions are made, in that using two distinct period of time where you're thinking about investments or actions to reduce GHG emissions or gain efficiencies. And so we do believe that businesses are already planning for post-2021 and how they've been complying with the program to date, and so we want to make sure that's a seamless transition.

We want to avoid penalizing covered entities in response to early action to reduce greenhouse gases or investment in allowances. We want to continue collaborations with program linkages and, again, we do want to maintain the benefits of the program's market features. We want to make sure it continues to be cost-effective through the opportunities to identify the lowest GHG reductions across the economy, compliance flexibility through trading and multiyear compliance periods, and we want to make sure that we minimize leakage.

So the next steps on the Cap-and-Trade Program itself on the rulemaking are -- first, I'm going to say there are no specific staff proposals at this time, so we're continuing to work on this. We will continue to have workshops in the first half of 2018. We actually have another workshop tomorrow. There will be a 45-day staff proposal later this summer and I actually did note that the next IEMAC meeting would be September 21st and I believe that should be around the time the 45-day proposal is out. So all stakeholders and members of the committee should have a proposal to look at before it goes in front of our board hearing. And then the first board hearing again will be fall and then a final board hearing by the end of this year.

We have heard calls from the regulated entities and we also believe that having the Cap-and-Trade regulation with the final vote by the end of year is best to ensure market certainty and make sure that people have a clear path and understanding of what they need to do. As we continue past 2020, think about 2030 target.

The last two slides, I won't go over them in detail but these are really to make sure that committee members and the public understand the amount of reporting and oversight over the program itself, not just Cap-and-Trade, but also other aspects of the climate policy in the state. We have -- obviously we have the mandatory reporting data, the inventory, we have board items, we have the five years scoping plan update. We have written reports per the legislature, and then on the next slide we have recent legislation. With AB 197 there's an information report each year. Mary Nicholas did provide a report in January to the AB 197 committee.

We recently had an AB 197 hearing, again, on another topic or a few topics, about 2 or 3 weeks ago, and then AB 398 of course IEMAC and report they're going to be providing and then another report by the legislative analyst's office, so Ross gets to work on two reports. You have my sympathy. Really this is just to make sure all the folks know all the opportunities, not only for public engagement, but other committee engagements and then legislative engagement on climate policies and the Cap-and-Trade Program. With that I will end my presentation. Thank you.

ANN CARLSON: So I wanted give any board members an opportunity to ask a question. I think we all probably have a lot, but we don't have a lot of time left. So we're going to try to limit this time period, but I do think it will be helpful for us to have opportunity to raise any issues, questions, et cetera, about your very helpful presentation.

DANIEL CULLENWARD: I have a question for Ms. Sahota. You mentioned the inclusion of the carbon price in the CAISO -- I suppose you're from the energy balance market our cross board electricity trade market is one of the areas where you've seen an impact from Cap-and-Trade Program on reducing emissions and I wonder given the fact we got discussions in Sacramento about potentially expanding electricity market CAISO, if the board has any thought at this time on how a carbon price would be included in a regional market and what that would look like if indeed that's an important part of the way the board is looking at this issue right now? Thanks.

RAJINDER SAHOTA: That's actually a very timely question because the regionalization discussion is very live at the legislature. There's been a series of bills I think over the last two or three years on this topic. The work that we have been doing with CAISO and the GHG that they currently have is for the energy and balance market. They are working on a day-ahead market and there was a legislative proposal, I believe it's public. That would make sure that before they move forward with any day-ahead market that it was designed to support California's greenhouse accounting and designed to be complementary and mesh well with California's climate policies. So the technical work on that continues. It is a precondition in some proposal legislation before regionalization can happen.

So the legislature is keenly aware that that needs to be resolved. We are continuing to work with CAISO. There is no public proposal by CAISO or CARB right now about how a day-ahead market will incorporate a carbon price.

DANIEL CULLENWARD: Sorry, just to clarify. I was referring to discussions to expand the regional market, not the day-ahead markets or the energy balance market. I guess what I would like to know is does the staff of the board consider the inclusion of the carbon price regional wholesale market to be an essential component of maintaining the state's climate policy?

RAJINDER SAHOTA: Well, we definitely see it as an important piece in making sure California achieves its goals. How that would look as the regional footprint grew in the energy and balance market is yet to be determined. Our goal right now is to focus on making sure that we're able to accurately account for all emissions that are attributed to load -- energy serving load to balance in California. To the extent that they may spur reductions in renewable -- or creation of renewables outside the State of California. You know, that would be a great benefit of what we do here, but our focus is making sure for the California policies we have accurate data and we have accurate price signals for what we're trying to achieve in our state policy. So for broader climate policy, I think that's a little separate than what we're trying to do and focused on in California right now.

ANN CARLSON: For those of us board members that are not in the room Dallas or Meredith, either of you have a question?

DALLAS BURTRAW: I would like follow up on that right on that same point. I also have a question, Rajinder. What -- you said balance marketing accounting of the emissions associated with the expansion of EIM -- can you tell me what point -- the present outcome for 2016, you mentioned that the emissions reductions associated with the

EIM contributed to that outcome, and maybe I'm not well informed, but I thought that the primary mechanism for accounting for the emissions EMAC of the expanding EIM was an ex-post retiring of allowances after CAISO sold the model, twice and they identified what was the leakage from home and retirements from allowances associated with potential leaders bound by the EIM. But you're saying that the EIM expanded BIM also had a direct impact on the utilization of the facility in such a way that it led to reductions in emissions. I just want to make sure I understand that clearly because that's really interesting.

RAJINDER SAHOTA: Right. And that's actually a good clarification. So this, first is did expanding EIM footprint allow more globals to be available for California where it had a load imbalance? Yes, it did and CAISO has data that makes that available and apparent.

The other is price signal and how do you deal with the emissions center not being accounted for properly in the system right now. So right now we have a bridge in the Cap-and-Trade regulation -- a bridge solution that says we will take the data coming out of the CAISO EIM at face value and to the extent that it is attributing greenhouse gases to people who are importing that power, they will face that compliance obligation. But because we know that some of the emissions are not fully accounted for, we take those megawatt hours that are coming through the EIM transfers and actually multiply them by the default emission factor -- which is marginal, natural gas in the western grid, subtract out any compliance obligation that's already calculated based on the data coming out of EIM and assign that as being the missing emissions of a program and retire allowances for that portion.

The two-path solution that you were speaking to, that's been in discussion, I think, for almost two years right now. There's been concerns recently about some ability to gain that solution or play that solution and so the two-path solution is not currently in the Cap-and-Trade regulation. It may be a way to quantify emissions but we're still working with CAISO. Ultimately that is something we want included and they would want to memorialize it in their production dispatch model.

DALLAS BURTRAW: That was super helpful. And really quick, let me slip in an important question with respect to the short-lived climate pollutant and the scoping plan which is from 5/6. So with other measures, for example, those covering transportation that are also covered under the cap, if those programs overachieved or underachieved, then we would expect essentially the influence of the carbon price to shrink or grow accordingly. But if the program's aimed at short-lived climate pollutants, they ultimately achieve the 217 million metric ton reduction that is targeted. Would it require an explicit visitation of the issuance of new allowances under the cap in order to achieve the 2030 goals, or is there some automatic relationship between the sort of out-of-market programs? Because I think the short-lived climate pollutant are largely out-of-market. I think I heard you say that. So I'm just wondering how the 2030 goal adapts to the successor or lower potentially short-lived climate pollutants.

RAJINDER SAHOTA: Yes, and you are right. And that they are out of the market. There's no direct relationship between those sectors and those emissions with the market program itself. I think our job is to look at the inventory, monitor progress on all of the programs and the sectors that we're trying to address for greenhouse gas emissions, and we need to make sure that we understand that some sectors are not responding, and if we need to introduce new policies or intervention to get them on track or if we have other areas in places where we can maybe make some more progress.

I think it's hard to say today that we need to revisit on some schedule because we do have the five-year scoping scheduled to look at this very issue. That would be 2022 -- hopefully 2022 and not earlier than that. The last scoping plan was a bit off schedule and came two years earlier than it was supposed to. But for the SOCP what's critical to remember is if they don't deliver and we have to go back and look at the sectors of the Cap-and-Trade Program, obviously the folks in the Cap-and-Trade Program or in the sectors that are -- not the SOCP sectors may have something to say about picking up the reductions that SOCP is not delivering. And we have been trying to make the point that not only is it the sectors in Cap-and-Trade, but don't forgot that there's this whole program out there that is almost delivering the same amount of reductions that needs to be implemented well and designed well to make sure those reductions happen.

DALLAS BURTRAW: Great answer. Thank you.

ASHLEY CONRAD-SAYDAH: Meredith got dropped. She's on a speakerphone here.

Meredith, if you have any comments I can hold you up to a microphone.

MEREDITH FOWLIE: Sorry, the past 10 minutes have been having technical difficulties. So I will -- just for now I apologize.

QUENTIN FOSTER: Thank you, Rajinder, for that presentation I really appreciate the work that you all are doing on the scoping plan and the work that is currently underway right now with developing the package you will be releasing soon. I do have one particular question. Please forgive my ignorance. I know that there are climate committee hearings on this subject, a lot of peppering from members with questions about this particular issue, but I wonder if you can explain to me how the recent fires are factoring into how you all are thinking through the package moving forward to make sure that when we lose some of our progress because of those particular events, how is that factoring into your decision making process and your thinking on capturing those emissions moving forward?

RAJINDER SAHOTA: Another great question and very timely because of the fire season that we just had, and we're upon another fire season. For the natural working lands and that's where these emissions would be placed that category is not directly tracked in the AB 32 scope inventory. But for the state's long-term goal, it's critical for the natural working land sector to become a net sink frustration and that will help the state achieve it's long-term goals.

The way that we have been talking about it is that not only do we need to reduce the emissions coming out of the industrial transportation energy sectors, but we also need to start removing carbon out of the atmosphere. Not on an equal basis to what's being reduced in the sectors that are emitting fossil emissions, but in a greater amount to compensate what's already been admitted into the atmosphere as part as the industrial age and so it has a tremendous role.

On wildfires themselves there's a couple of things there. One is the emissions are really hard to quantify. There's work underway at natural resources, ARB, and some of the universities to try to get a better handle on doing that. The other is what practices are really important to make sure that if we have a wildfire, it's not going catastrophic. It's something that's manageable, you have minimal loss, and that goes back to forest management activities. So there's that work. I think the other piece is how do you forecast or potentially manage a potential situation for a fire in that's forecast modelling, they are sporadic, you have no idea when they are going to be happening or where they are going to be happening or what the size is. Again, it falls back on climate conditions, drought conditions, rain conditions, and particularly for last year -- if you guys want to indulge me -- we had a long period of drought and we had a very heavy rainfall season and things grew, I mean they -- it was like a whole new landscaping in regions of California because of the extensive rainfall, and then we had a drought again, and then you had a wildfire with high temperatures.

Not only is that indicative of climate changes and extreme climate events, but it's also indicative of public health because the PM emissions from that required notification -- emergency notifications in several regions across the state, and so like I said for long-term climate goals, it is critical that we get a handle on the natural working lands piece. It's probably less easier for us to do that because as engineers, we all go for -- let's put a meter on it and meter it and let's figure out what the technology is to reduce those emissions and make this more efficient. For a biological system, it doesn't care about our meters, and that's going to be a challenge we need to keep dealing with.

ANN CARLSON: So what happens in the waivers revoked and what's the backup plan on transportation?

RAJINDER SAHOTA: That's a great question. So in every scoping plan and the first one that was in 2008, we've always had a line that if there was a delay in federal action in supporting activities that we need to undertake in California to meet our climate goals, we will pursue our reductions on our own, and we will fight strongly and quickly to make sure that any federal waiver that we saw was approved or on the verge of being approved is quickly moved forward.

For the waiver that you're speaking -- I don't know is the vehicle waiver the standards -- the vehicle standards waiver, transportation is critical from both air pollution and greenhouse gases. We have very smart attorneys at ARB that are on this. And I am pretty sure that we may see a delay, but we will not anticipate that we will lose something here.

ANN CARLSON: Now's the opportunity for public comments on this particular portion of this presentation.

Hearing none, Emily you're up.

DANIEL CULLENWARD: May I quickly ask the vice chair, just want to make an observation, it's 11:10 and the committee essentially has done no work so far so I hope we will be able to get to discussing what we will be doing after the presentation with Emily Wimberger.

ANN CARLSON: Yeah, trying.

EMILY WIMBERGER: Thank you for the opportunity to talk. I'm going to follow up a lot of what Rajinder was talking about and dive a little deeper into the economic modelling that we did both for the scoping plan and focus a little bit on the Cap-and-Trade Program, which as Rajinder mentioned is currently undergoing immense?

So I'm going to start out with a bit of a general overview on what we did for the scoping plan. So the goal was really to evaluate the economic impact of all of the different options that we had for achieving the 2030 greenhouse gas target. So we estimated -- we had different scenarios that puts together different bundles and measures and policies and we wanted to estimate the economic impact of different technology pathways and different carbon pricing mechanisms to see what will help us achieve our 2030 target, which was the number one goal of the scoping plan, but think about it in a way of doing it that's cost effective, that does not overly burden California households, that does not cause extensive leakage, and has a slow and steady price on carbon.

Another goal of this was really to help think about looking at the cost of technology, how could that help us put together the measures and the policies that we're going to need to achieve these targets. So again the scoping plan contained sort of rough cuts of different measures. There was the large measure that was the short-lived climate pollutant strategy, but there's no individual regulations yet to find to achieve those reductions. So some of the work that went into the economic analysis, you know, really evaluated the cost and some of the reductions that we can anticipate from different pathways and that really can help us think about the technologies that we want to see promoted. It can help us think about new research and development that needs to happen so we really can get these reductions.

So to do so -- to do economic modeling, we use two tools. The California pathways model and this was an external research contract. It's developed by E3 which is based in San Francisco and it's a stock rollover model. So they basically look at technology costs and the greenhouse gas emissions associated with different technologies and they basically forecast the stock changes in capital and fuels that would be required to achieve the greenhouse gas emissions reductions and calculate those technology costs.

To think about the macroeconomic impacts of the scoping plan, we internally ran the REMI model, regional economic models. So this is something that we use in-house and in requirements for SB 617, so there is a requirement through the Department of Finance for any regulation that has an impact over $50 million or more in a 12 month period that we'll do more extensive macroeconomic modeling. The Department of Finance has endorsed REMI as a tool that can be used for that and so we did look at the macroeconomic impacts of the scoping plan and other major regulation using this model.

This is a really lovely schematic that I've tried out many times. And this really gives you an overview of what we did in the modeling for the scoping plan. So again the two blue boxes are the model -- or the blue box is the pathway analysis and red box is the REMI model, those are the models that were used but really a lot of the inputs were -- they came from publicly available information. So essentially what we did is we put together a reference scenario, which is more difficult you think, to predict what's going to happen in the California economy in the absence of additional climate policies.

But basically we mapped out through 2030 what does business as usual look like if we continue on the path? Because given sort of, you know, the -- where the economy is going that prices are falling in terms of renewal even absent additional climate action, we anticipate we're going to see larger penetration of zero emission vehicles and also renewable energy. So part of the challenge was really parsing what's going to happen naturally versus what is required to be motivated by additional action.

So in order to do that we looked at a lot of the existing data out there. Different forecast and energy demand, demand our fuel prices. We looked at what we said in our SIPS, our climate commitment, and what we're going to need to do in terms of our vehicle population in order to achieve air quality reductions in California. And then we put together different scoping plan measures. So we had different bundles of policies and measures that we put together that would outline different fuels, different capital requirements that can help us achieve our reductions to get to 2030 target above and beyond where we would be in the referenced scenario.

So all of that information came from public sources. We solicited information from all of the state agencies. We also consulted with economic reviewers who provided some feedback on some of these assumptions that we're raising. And this is all information that was fed into the pathways model. So the output of the Pathways models were GHG emissions and also the cost and/or savings associated with the stock change in capital and fuel. So then what we did -- and this is where I should note this is for all of the measures, that are not carbon prices. So pathways does not have the capability given that's just looking at capital and fuel, it does not have a carbon pricing module inside of that model.

So for all of the measures, the short-lived climate pollutants, thinking about the mobile source strategy, the 50 personality RPS, and energy efficiency, all of those different programs and policies were modeled in the scoping plan measures and put into pathways. You'll see the green dotted lines on the other side. What was done on Cap-and-Trade and for the carbon tax assessment is we did those calculations of the cost and the GHG emissions that we can anticipate offline. We did that internally at ARB and all of that was done and put into the REMI model to figure out what the economic impact of our overall suite of measures was on the California economy.

And you also see other monetized cost and savings as another box. So we did also try to include changes in health expenditures related to avoid health impacts that we can anticipate because of air quality, co-benefits from reductions in GHGs. So we did calculate -- there's a slide later, but we did calculate avoided premature mortalities, avoided hospitalizations, and avoided ER visits and we quantify those and monetized the change in household expenditures that would result from that also was fed into our REMI model.

Okay. So this gives you a little more detail. It just gives you a little bit more background on sort of what Pathways and REMI do and the data sources that were included. I think it's important to note that we did use the technology and fuel cost from the Pathway's model as the input into the REMI model. And the REMI model again is thinking about not just the direct cost of those changes in capital and fuel but also one of the indirect impacts on associated industries and also what are the induced impacts and changes in household expenditures. You know, if zero emission vehicles, if those requirements by zero emission vehicles are households then increasing the amounts they are spending on vehicles and reducing the amount of money they have for everything else in their budgets? And, again, we did this in the scoping plan for what turned out to be the final scoping plan scenario as well all the other alternatives.

Just to give you a little flavor of what this actually looks like, I will say that we do have a really dense 100-page appendix that outlines excruciating amount of detail. But this is really what came out of Pathways. And so we calculated basically all of the different changes in capital fuel for all of the different measures that are proposed, and this outlines it by unused sector, and it's in 2015 dollars. So you can see that there are changes in capital costs and then also for a lot of places declines in fuel cost, and this is due to the suite of measures. There are capital requirements. People are going to be buying more vehicles. But there's also going to be fuel cost savings if you're spending less on fuel because you're driving a zero emission or a low fuel efficient vehicle.

So this gives you a sense sort of how the breakdown was done. You can see different sectors experiencing different amounts of costs. The industrial sector, there's an increase in capital costs but decreases in fuel costs and no net impact on petroleum refining.

ANN CARLSON: Can I just interrupt you?

EMILY WIMBERGER: Yes.

ANN CARLSON: Just as a going forward, I think we're going to try to go to 12:30 as long as everybody is available on the committee. We do need to give you a break at some point, so we will do that after her public comments. If that's alright with everybody we can still lodge time. Thank you.

EMILY WIMBERGER: And this ledge shows the final economic modeling -- so the macroeconomic impacts of the scoping plan scenario that was published in the scoping plan, the main economic indicators that we look at are changes in California GEP, changes in employment, and changes in personal income. And it should be noted -- so you'll see that there's absolute change and there's percentage change. So this is not relative to today, this is relative to future projected 2030 reference case. So really what we're measuring is the incremental impact of implementing the scoping plan policies relative to the California economy where we don't implement those policies.

As you can see there is a pretty modest change in terms of the percentage change across all of these major economic indicators. The California economy through 2030 is projected to continue to grow. I think the California economy is projected to go from $2.4 trillion currently to $3.4 trillion in 2030. So when we see negative numbers, it's not that there's a contraction in the economy relative to today, but there's a slight slowing in growth in the California economy because of the implementation of these measures. Overall it will take the California economy about three months to make up this difference, so we get to the point, the GDP point at which it would have been in 2030 three months later if we went with the scoping plan.

And, again, this is a projection of the current California economy, so we take the industries that we have in California today. We're not imagining -- we're not forecasting contrasting major changes. And this is all based on the Department of Finance forecast. So there really is room for dramatic transformation, we just don't really know how to model that. So this is really -- it's a conservative way to think about it. There's a lot of uncertainty here, but it does give us some sense of what the impacts will be on this program.

I think another important thing we did is we compared all of the impacts across the different alternatives. So, you know, confining all of the different scoping plan, we had, you know, just a command and control descriptive measure alternative, we have a carbon tax alternative. Comparing all of those across each other, we did find that the scoping plan scenario was a suite of policies that did have a very low impact on the California economy and a very high probability of achieving the 2030 target. So even sort of in model comparisons, this suite of measures came out pretty well.

We did also look at additional impacts. So we did an estimation as I said of the avoided health impacts that include premature mortality, hospitalization, and ER visits. And those economic, those additional impacts in 2030 could range from 1.2 to $1.8 billion, so that's not insignificant.

We also evaluated the social cost of the scoping plan. There's a requirement of AB 197 that we can consider the social cost of any policy that goes beyond our 2020 GHG target. And so what we did is used a social cost of carbon and a social cost of methane because we do have methane reductions that were to be looked at under the short-lived climate pollutant strategy. And then we estimated -- we did use the Obama era social cost of carbon and we will continue to use that until there is new science that is reliable. So we did use the social cost of carbon to evaluate the avoided environmental damages of what we're doing in the scoping plan. In 2030 that evaluation ranges from 1.9 to $11.2 billion.

So this gives us a sense of, you know, some of the benefit side and we do want to continue to work -- as Rajinder said theres a lot of discussion now in looking at the impacts of natural working lands, both in terms of their ability to be a carbon sink and then to also make sure that we are fully quantified in the ecosystem service impacts of what we're doing in our policy framework.

We also looked at the household impact of what we're doing. So the estimated household impact using changes in personal income that was modelled in the REMI model and changes in population from the Department of Finance. What we find is that the suites of the scoping plan to achieve the 2030 target will result in an estimated cost to households of $115 dollars to $280 in 2030, and that's again relative to no suite on the policies.

ANN CARLSON: Is that annual?

EMILY WIMBERGER: That's annual, yeah, and it change -- it depends on implementation timing. We also did look at the distributional impact of what we're doing. We wanted to make sure that different regions of California would not be adversely impacted, and also we were considering disadvantaged communities. So to do that, we used a slight variation of a REMI model. We do have a REMI model that has all the California counties.

And what we did is we looked at the impact on the wages employment and sector valley added just sort of like a regional GED and we compared -- so parsed all the impacts by county and then we also did match up the CalEnviroScreen 2.0, cause this was a while ago, the census tract to sort of map those to the REMI California county model, and we were able to look at individual impacts on disadvantaged communities and did census tracts that were not disadvantaged and what we did find -- again, these are estimated impacts, but we did not find any discernable difference in the results by region in California nor across census tracts that are labeled as disadvantaged communities and those that are not throughout the state.

So I think we do want to make sure that we're digging into those issues further. This was sort of the first time we really tried to do something. It's very much in line with what is done in different regions of California, the South Coast Air Quality Management District has done similar distributional impacts to come up with similar results.

The last piece I am going to talk about on the scoping plan is we did do an uncertainty analysis. I think one thing that Secretary Rodriguez mentioned, we had two-day symposium posting in Santa Barbara where we discussed how you actually evaluate the impacts of California's climate policies? How do you parse the impacts from one program relative to a suite of measures? And the really big overall thing is "Oh, there's a lot of uncertainty here." And so I think we want to be very cognizant about it and while a lot of our numbers and our documents look very precise, they do represent estimates and we do want to be very transparent with the fact that these are uncertain.

Unless you have a crystal ball trying to predict what's going to happen in the future is quite difficult. And so to get a handle on how changes in California economy might impact both the cost of achieving the 2030 target and the ability to achieve the target, we did do an uncertainty analysis. We basically looked at what would happen if the California economy grows faster than we anticipate, what if it grows more slowly than we anticipate.

We also looked at the uncertainty related to fossil fuel prices, you know, we did plus or minus 20 percent on what we were predicting, on what we were using as a reference case for our fossil fuel prices. We also looked at the uncertainty of what if the other measures -- the non-Cap-and-Trade measures, what if they overperform or if they underperform? What would that do to the cost of achieving the target as well as our ability to achieve the target. And then we also looked at another source of uncertainties, what are the emissions reductions that we'll achieve for different prices in the Cap-and-Trade Program.

So we played with all these variables. We did a Monte Carlo analysis and ran 10,000 different resolutions and what we found was that the scoping plan scenario on the suite of measures had about a 96 percent likelihood of reaching the 2030 target. And again, this is a model result, but we did try to make sure that we are thinking through some of the likely sources of uncertainty, and we're able to say something about that. We did a -- and this was the highest percentage of -- this was the highest probably of achieving the target of any of the different alternatives that we did measure.

So then giving a little bit to the evaluation of the Cap-and-Trade Program within the scoping plan, I do think we want to recognize the difficulty in isolating the impact of one program from a suite of measures, let alone in the California economy. These are really hard modeling questions, I'm glad we have an expert panel to weigh in on them, but it is difficult. So I think there's a lot of things we do not consider when looking at one policy or program isolation. There are a lot of interactive effects, you know, why is the facility making a decision? Is it because they want to comply with the Cap-and-Trade Program? Is it because of some other reason? A tax reason?

So I think there's a lot of difficulty in understanding the sort of rationale and trying to parse and assign benefits or emission reductions to assist with their program. It's also difficult to understand baseline conditions. We have a reference case with the California economy but what does that look like sector by sector? What does it look like when you're thinking of an individual facility or individual fleet owners motivation to make different decisions and choices and also uncertainty? Again, so there's a lot of uncertainty in sort of both the estimation of costs and benefits and also trying to think about rationale and motivation for different actions.

I do think that something that Rajinder mentioned is really important for us, are really understanding the right metrics for tracking our progress. We deal with the emissions inventory and we do want to continue to think about indicators. And so trying to parse out the impact on one programs on one California GDP is very difficult in sort of a larger portfolio. Also employment impacts, we have a lot of policies that work together and so because of the Cap-and-Trade Program, there is a pot of funds -- the greenhouse gas reduction funds, that those funds are used to further reductions in greenhouse gases in California. So I think there's a lot of difficulty in trying to parse what are the impacts of the Cap-and-Trade Program on the California economy relative to the decision to where we sort of put these different funds and how those benefits improve in different sectors across California. I also think about research and development and how those monies are spent, it's really hard to understand sort of where those costs are assigned from one measure within a portfolio.

I'm going to talk a little bit about Cap-and-Trade. So the Cap-and-Trade Program -- and we're currently thinking about modeling the economic impact of the Cap-and-Trade Program for the regulation right now because the amendments are ongoing. But really what we want to do within the REMI model is we estimate the impact by change and expenditures to reflect the need to purchase allowances to reflect the free allocation of allowance to cover sectors and we do also model the return allowance value from the auction of state-owned allowances through the greenhouse gas reduction fund.

So we do try to consider all the different costs REMI model in the Cap-and-Trade Program and given that is a market-based program, it's difficult. We don't say "Okay, we know that you're going to implement technology and it's going to cost Y dollars." So what we do is look at abounding arguments, so we look at there is an auction reserve price. So there's a minimum of allowances that you can buy at auction and then there is an upper bound. And so what we've done is we look at the costs to California's economy and to different sectors of assuming that the price of the allowances that were made to purchase were at the floor and then at this upper bound level. So that gives us a range of the economic impacts for the Cap-and-Trade Program. When we're thinking about how to assign these costs to different sectors, we look at the emissions obligations based on historic data and so we have that two digit mix code and then we just decide the REMI model.

In terms of how we model the return allowance value, as Rajinder mentioned, there is industrial allocations to minimize leakage. There's also allocation to electricity and natural gas utilities on behalf of rate payers, and then we think about how the values were turned to California consumers, how we're modeling it so far -- and this is open to suggestion -- we basically looked at historic GGRF for appropriations and assigned specific tranches of funds to those sectors and then any remainders we return to the California households as sort of per capita dividend. So that's been the structure of how we modeled that return value. I will say that a lot of the givens of the modeling structure both of REMI and our methodology choices, the return of value has a huge impact on the overall economic benefit or cost to California. So I think those decisions are sort of outside the scope of the regulatory process with the Cap-and-Trade Program, but they are related and they do have a huge impact on the overall benefit that we will see in California of the

Cap-and-Trade Program.

So just in terms what we will be doing in the next -- through December when we are looking at the Cap-and-Trade, the economic analysis related to the Cap-and-Trade regulation. So there's three major regulatory requirements that will be completed. So the first thing that the public will see is what's called the SRIA, the Standardized Regulatory Impact Assessment, and this is -- as I was mentioning this is -- whenever there's a regulation classified as major, so a $50 million impact in 12 months DOF, Department of Finance, requires us to do a sort of a very early cut of the macroeconomic impacts of the proposed regulation. And that is that that is sort of the first thing that is public whenever there is a major regulation. We also will do -- there will be an economic analysis in the staff report or initial statement of reasons, as well as a form 399 or an economic fiscal impact statement that is part of the rule-making package and is submitted to the Department of Finance.

In terms of how we are in the impact that we're assessing, we do look at impacts on small businesses, individuals and households in California, fiscal impacts on local and state government, we look at the impact on California business. It's a very California specific plan. The overall California economy, employment, investment, personal income, incentives for innovations, and we do consider competitiveness of California businesses when we're looking at the cost of the benefits. So these are really the types of impacts that we're going to be looking at, and have historically looked at, but looking forward very much to the input of the IEMAC committee on some of those major issues and I'll stop there. Thank you.

ANN CARLSON: So I want a little input from my fellow committee members about whether you'd rather take a little bit of time to ask questions, or whether you want to just move into public comment and use the reminder of our time to have a conversation about our workload going forward.

QUENTIN FOSTER: I'm fine with public comment.

DANIEL CULLENWARD: I have a brief question I would like to ask.

ANN CARLSON: Dallas, what are you thinking?

DALLAS BURTRAW: I think that brief questions are highly valued because it gives opportunity to get some clarification. So I think we should take just a couple minutes to do that, and I have one in the queue also.

ANN CARLSON: And Meredith, I think said something similar. So let's go for ten minutes, that will leave us about 40 minutes after we take a break.

Dallas, you want to start us off?

DALLAS BURTRAW: Emily, if I understood you to say that revenue have a huge impact on the economic outcome which is understandable based on the literature and what we know, but I think you said that that was evaluated in a comparative way, or you're only doing a representation of what is now the full prescription due to various influences beyond the scoping fund?

EMILY WIMBERGER: Well, I will say historically we played around with it and looked at, you know, what happens if you do -- if you return all value to consumers. This was a pre-AB 398, when we were thinking, you know, there is a large -- you know, there are many possibilities in terms of what the final rule would look like. We did play around with some of this and looking at what happens if you return to different sectors if you assume that it's all per capita dividend. So we did do some of that background work.

I think what we're trying to do now as we move forward there are specific -- there are specific requirements, there are specific tranches for some of these greenhouse gas reductions that's outlined in AB 398, so we have been trying to match to the extent that we can in a macroeconomic model, but I do think that does sort of -- understanding the impact of those revenues is really important, and I think, you know, we are -- has to pass to legislature there directing where the response go, but I think it is an important consideration to see sort of where we could have potentially a larger impact on California's economy. We haven't yet sort of done that in the current rulemaking. I think we've tried to think sort of what we've done in the past and try to conform at least what we can with AB 398.

ANN CARLSON: Meredith, do you have --

MEREDITH FOWLIE: Yeah, I'll keep it brief and focus on this one issue. Emily, if you could comment briefly on how REMI deals, or accommodates or doesn't accommodate freight flows both with other states and other companies because in the list of impacts you analyzed with surprising results, there wasn't much discussion of leakage (inaudible) on that side of the state. So can you help us understand to the extent that they accommodate analyses of these trade flow impacts on leakage or not?

EMILY WIMBERGER: Yeah, that's a great question. It's limited I would say. We do -- REMI has -- we have the California version of REMI and then there is outside of California. And then there is a matrix that sort of shows for every dollar in California that is based on the EA data, you know, for every dollar in -- a certain dollar in California X percent goes outside of California. So we did try to play around with that a little bit. The ability for

REMI to do it is pretty limited I will say and so we tried to things that we can to think about the impacts of leakage. And we've done -- as Meredith was a part of a different external analysis to really try to dig into some of this, but the ability for REMI to do that is limited. We can look at cross sector impacts and there's regionalization within REMI but the ability for it to sort of predict or to quantify specific leakage impact is limited.

ANN CARLSON: Danny.

DANIEL CULLENWARD: Thank you, Dr. Wimberger. First thing I just want to say is I appreciate how complicated these questions and issues are and you've done a really thorough job in providing an overview. I have a question about slide 9. You mentioned that in your analysis that the board found a 96 percent likelihood meeting the target based on the uncertainty analysis. And you held up that lovely thick copy of Appendix E of the scoping plan.

I want to point out to my fellow committee members that that analysis is an uncertainty analysis based upon some assumptions in Appendix E about the price induced mitigation that the Cap-and-Trade Program is assumed to deliver but there's no citation or explanation at least in Appendix C. So my question is whether or not the board is going to offer more background on where that number came from and whether or not the board has done a sensitivity analysis of some of the lower numbers that other studies have put out instead?

EMILY WIMBERGER: Yes, that's a very good point and we definitely want to be transparent that there are a lot of assumptions that we had to make to conduct that analysis. And we, you know, this was part of a two and a half year scoping plan process and we did solicit feedback on those numbers and got no input. So we felt that was also slightly disheartening, we were hoping that we would get something. But we did do sensitivity --

(Telephone interruption.)

EMILY WIMBERGER: Going back to your question, so the quick answer is, yes, we did sensitivity analysis and part of this is trying to parse the impact of that -- I think this was the Monte Carlo analysis of trying to understand the impact of that one assumption relative to all the other assumption we have made, and the other answer is, yes, there will be more information sort of released about why those ranges were chosen and looking forward to thinking about, you know, how we can think about different -- the cost of different technologies and how that plays into the analysis and in the future, so yes and yes.

ANN CARLSON: So, I have a question actually for both of you and that is if you could ask the committee -- or let me put it a different way. Where are your biggest areas of uncertainty in both of your reports and where could you use the most help with feedback from us?

RAJINDER SAHOTA: So thinking back on the recent legislative hearing and some of the discussion that played out last year, one of the things that we grappled with was how we show what specific policies are producing in terms of economic or environmental impacts on the state?

For Cap-and-Trade it's a little challenging just because we have a few year of data points. But I think as the program continues that question is going to keep coming up just as it will for some of the other policies. And so we would welcome any advice or any suggestions from the committee on how to begin to look at the policy in California and then how to try and isolate to the best of our abilities as we need the different impacts of different programs because I think that will continue to be an ongoing question, and rightfully so, with members of the legislature, members of the public, and our own board.

In terms of uncertainty, I think that just goes back to the scoping plan and that we had certain assumptions about how business as usually scenario would play out over the next 13 years in California. We have assumptions about what our policies are going to deliver, assuming that they are going to be implemented in a way that maximizes the benefits for those policies. And understanding, you know, are there better ways to think about uncertainty? Are there ways to think about how they could potentially overperform or underperform, and how frequently we should potentially act on the information that we get knowing that we get information once a year from the GHE inventory. We have the five-year period but you know one year or two years may not be indicative of a long-term trend that requires an action today. Thank you.

EMILY WIMBERGER: I think she stole all of my suggestions. I do think it's --you know, given a lot of what I think we could use assistant with is thinking about, you know, how do we best convey -- these are very comply kited processes and we relied on some complicated modeling and I think where we could use input is what are the public -- what could we put out publicly that would be helpful to sort of convey the messages around, you know, reductions, environmental performance, economic performance of both Cap-and-Trade and the larger suite of climate policies. I think that that would be -- that's an area that I think your input would be great.

Also I think there's a lot of uncertaintiesaround interactive effects of policies and understanding, yes, how, you know, how all our suite of vehicle measure put together and if you take out one piece of that, where can we pick up additional reductions and what would that look like. I think the interactive effects answer to that is, you know, there's a lot. And, yes, if you have crystal balls, please give them to us. But again, I think a lot of it is too is related to, you know, the -- if there are suggestions for different analyses or different public information we can put out that could provide clarity and if there are better ways and different sources for assumption that we can use, I think those all would be great things but I think Rajinder hit pretty much everything right on the head.

ANN CARLSON: Thank you. Any public comments?

MEREDITH ALEXANDER: I'll just ask a few questions in a group if you don't mind. My name is Meredith Alexander and I'm here representing SMUD, Sacramento Municipal Utility District for those who aren't local. A couple of questions for Emily and the committee to consider I guess as well. You mentioned you talked about the fact that how funds are returned to Californian is really important in terms of overall impacts to the state because I'm assuming households get money back and they reinvested and obviously we didn't know that the legislature directs where the funds go ultimately, but having not read everything you put out, how much information do you include in there about those macroeconomic impacts of how funds are spent so that the legislature can make more informed decisions?

EMILY WIMBERGER: So that's a great question. I think part of it is sort of the modeling structure that we use, it's slightly unsatisfying because it's at, you know, the 20,000-foot level. So how we really model that is we take -- you assume there's X amount of funds and you say historically there's been, you know, up to $2 billion spent in different tranches, so we will say "Okay, this sector as defined by a very generic code in REMI, we'll get ten percent of whatever funds we assume are going to come back GGRF.

So it's a pretty course cut, but it has shown us that, you know, a lot of the assumption at least in the model when it comes to how those indirect impacts are. If you give money back to people, you see people increase they go out and they spend money in like restaurant. So you see different changes that might have different employment impact relative to, you know, if you're funding high-speed rail that has large construction accolade and what what does that look like. So I think it's just thinking about the trade-offs and that there are different benefits that kind of accrue if we decide to parse these money in different places.

There is internally at ARB on the GGRF side, there is a quantification of this. The staff is looking at the co-benefits of the GGRF spending project by project so we are trying to think about this more internally, but it does raise -- it's an important note that a lot of the benefits are in these funds and that where we do put them does make a difference. There's a little bit in the scoping plan appendix where you can see we made different assumptions for the scoping plan scenario, which has a Cap-and-Trade and on the carbon tax scenario where we just returned all of the value as per capita dividend from the tax. You can see that there are different impacts related to those additions and choices.

And for the GGRF programs there's like a X post analysis that's available for the legislature. If -- I'm not -- I will have to get back to it. Right now they are working on quantifying that and they are collecting data and trying to figure out when you do get direct funds to program along with quantifying the greenhouse gas reductions that are resulting from these programs. You do also want to be able to speak to the co-benefits of that in terms of changes of glutens, changes of employment and so those are discussions are currently ongoing. We're still working to iron that out. There is some information that we do put out publicly on those programs and results but it's related to the GHG side instead of work the co-benefit quantification is on the right.

ASHLEY CONRAD-SAYDAH: Emily, I want to weigh in here. There's an annual report to the legislator on the greenhouse gas reduction fund additionally. This year for the first time we're asking agency to report more than once, so there will be two reports from agencies under the greenhouse gas reduction fund and the upcoming guidelines based on public comments, there will be an addition of reporting requirements for those co-benefits. So stay tubed for the July board meeting when these guidelines would be up for public comment.

ANN CARLSON: Let's take a five-minute break and come back at 11:56.

(Off-the-record at 11:51 A.M.)

REPORTER'S CERTIFICATE

I, LaCreisha Vaughn, CSR No. 13945, a Certified Shorthand Reporter in and for the State of California, do hereby certify:

That said meeting was taken before me at the time and place set forth and was taken down by me in shorthand and thereafter reduced to computerized transcription under my direction and supervision, and I hereby certify the foregoing deposition is a full, true, and correct transcript of my shorthand notes so taken;

I further certify that I am neither counsel for, nor related to, any party to said action, nor in any way interested in the outcome thereof.

Dated this 13th day of July, 2018,
At Sacramento, California.

LaCreisha Vaughn

LaCreisha Vaughn, CSR No. 13945