DOCKETED	
Docket Number:	17-MISC-01
Project Title:	California Offshore Renewable Energy
TN #:	244162
Document Title:	Transcript of 6-27-22 re Notice of Lead Commissioner Workshop on AB 525
Description:	Transcript for Workshop on AB 525: Offshore Wind Maximum Feasible Capacity & Megawatt Planning Goals for 2030 and 2045
Filer:	susan fleming
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	7/21/2022 2:08:44 PM
Docketed Date:	7/21/2022

CALIFORNIA ENERGY COMMISSION

COMMISSIONER WORKSHOP

In the matter of,	)	Docket No. 17-MISC-01
	)	
California Offshore Renewable Energy	)	RE: Offshore Wind

Notice of Lead Commissioner Workshop on Assembly Bill 525: Offshore Wind Maximum Feasible Capacity and Megawatt Planning Goals for 2030 and 2045

IN PERSON AND REMOTE VIA ZOOM VIRTUAL MEETING

Warren-Alquist State Energy Building
Art Rosenfeld Hearing Room
1516 9th Street
Sacramento, CA 95814

MONDAY, JUNE 27, 2022

9:30 A.M.

Reported By:
Martha Nelson

APPEARANCES

State Agency Representatives

Kourtney Vaccaro, Commissioner, California Energy Commission
Siva Gunda, Vice-Chair, California Energy Commission
Clifford Rechtschaffen, Commissioner, California Public Utilities Commission
Genevieve Shiroma, Commissioner, California Public Utilities Commission
Alice Reynolds, President, California Public Utilities Commission
John Reynolds, Commissioner, California Public Utilities Commission
Neil Millar, Vice-President, California Independent System Operator
Scott Morgan, Chief Deputy Director, Governor's Office of Planning and Research

Presenters and Roundtable Participants

In-Person

Michael Gerace, Yurok Tribe
Jacqueline Moore, Pacific Merchant Shipping Association
Priya Sreedharan, GridLab
Amol Phadke, U.C. Berkeley, Goldman School of Public Policy
Molly Croll, Avangrid Renewables
Kim Delfino, Earth Advocacy
Scott Flint, California Energy Commission
Jennifer Mattox, California State Lands Commission
Jenn Eckerle, Ocean Protection Council
Steve Chung, Department of Defense

Via Zoom

Mark Gold, Ocean Protection Council
Amanda Cousart, California Coastal Commission
Nicole Hill, The Nature Conservancy
Walt Musial, National Renewable Energy Laboratory
Nathan Barcic, California Public Utilities Commission
Mike Conroy, Pacific Coast Federation of Fishermen's Associations
Scott Morgan, Governor's Office of Planning and Research
Chris Potter, California Department of Fish and Wildlife
Jeff Billinton, California ISO
Jana Ganion, RedwoodCOREHub
Sofia Magallon, Central Coast Alliance United for a Sustainable Economy

APPEARANCES (Contd.)

CEC Staff

Rhetta deMesa

Hilarie Anderson

Public Advisor

Dorothy Murimi

Public Comment

Tom Hafer, President of the Morro Bay Fisherman's Organization
Theodore Paradise, Hexicon
Mark Roest, Sustainable Energy, Inc.
Kelly Boyd, Equinor Offshore Wind
Michael Olsen, Aker Offshore Wind
Adam Stern, Offshore Wind California
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Erin Kester, RWE Renewables
Dan Jacobson, Environment California
Eddie Ahn, Brightline Defense
Mike Monagan, State Building and Construction Trades Council of California
Patrick Boileau, International Union of Operating Engineers
Nancy Kirshner-Rodriguez, Business Network for Offshore Wind
Nancy Rader, California Wind Energy Association
Manley McNinch, Southwest Carpenters Union
Dennis McGinn
Michael Stocker, Ocean Conservation Research
Jose Radillo, Laborer's International Union of North America
Richard Charter, The Ocean Foundation
Jim Lanard, Magellan Wind
Mike O'Boyle, Energy Wind
Guillermo Ceja, Liuna Local 585
Mark Smith, Coastal Conservation Association of California
Alan Alward, Secretary of the Morro Bay Fisherman's Organization
Maya Canonizado, Monterey Bay Aquarium

APPEARANCES (Contd.)

Jeremiah O'Brien, Vice President of the Morro Bay
Commercial Fisherman's Organization
Kate Kelley, Defenders of Wildlife

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P R O C E E D I N G S

June 27, 2022 9:33 A.M.

MS. DEMESA: Welcome and good morning. We're going to give it a minute for folks joining us remotely to enter the webinar.

(Pause)

We have a pretty good flow of folks coming in.

(Pause)

Think we're slowing down a little bit, so we'll go ahead and get started. Good morning, I'm Rhetta deMesa with the Energy Commission's Siting, Transmission, and Environmental Protection Division. Welcome to today's workshop, focused on Assembly Bill 525, and the requirement for the CEC to establish offshore wind planning goals for 2030 and 2045.

Before we begin, I'm going to go over a few housekeeping items. First, this meeting is being recorded and being held both remotely and in-person to improve public access. For those of you joining us remotely, to make the workshop more accessible, Zoom's closed captioning has been enabled. Remote attendees can use this service by clicking on the live transcript icon, and then choosing either show subtitle, or view full transcript.

The closed captioning service can be stopped

by exiting out of the live transcript or selecting the hide subtitle icon. Closed captioning cannot be exited by phone. Workshop materials can be located on the CEC website, which can be accessed by those in the room using the QR code labeled "workshop materials," located in the back of the room near the entrance.

For those of you online, we will drop the link to the workshop materials into the chat. For those of you joining in-person today, restrooms are located outside of the Rosenfeld room to the left, to the P —— to the left near the P Street exit. In case of an emergency, please follow the CEC staff to the Roosevelt Park, located diagonally across from the Warren-Alquist State Energy Building.

Next, slide please.

Next, when we get to the public comment portion of our agenda, we will start with those in the room followed by those online. For those in the room that would like to make public comment, please sign up through the QR code labeled, "In Person Public Comment," located in the back of the room near the entrance. If you are unable to use the QR code for any reason, you may also fill out a blue card located on the table in the back of the room and walk it over to Dorothy from our Public Advisor's Office. Dorothy is in the corner

over there.

(Pause)

For those of you on the Zoom that would like to make a public comment, we will be using the raised hand feature today, which looks like a high-five. For those of you joining by phone, please press star-nine to raise your hand, and then star-six to mute and unmute. Please also note that the chat feature is not available today.

A few more notes on public comment. Public comment will be at the end of the meeting. Comments may be limited to three minutes or less per speaker. We'll show a timer on the screen, and we'll alert you when your time is up. All comments will become part of the public record.

Next slide, please.

I'm briefly —— next slide, there we go. I'm briefly going to go over our agenda for today. The workshop this morning is going to be held in a roundtable format. We'll start with introductions from our roundtable participants. We have a full agenda today, so we ask that introductions are brief, and limited to your name and affiliation.

Following introductions, we'll hear presentations from our study presenters on several

offshore wind resource modeling studies. And then, we'll hear remarks from our other invited roundtable guests joining us today. At the conclusion of the roundtable we will have public comment, and we'll wrap up with closing remarks from our agency principals.

Next slide, please.

Finally, before I hand it over to Commissioner Vaccaro to start the roundtable introductions, I want to share a few guidelines for our roundtable participants this morning. First, as previously mentioned and just as a reminder, introductions should be limited to your name and affiliation. Also, any time you are speaking, please start with your name and affiliation. And make sure you are speaking clearly into the microphone for those participating virtually, as well as for our court reporter.

Please participate respectfully, which includes maintaining speaking order. Our roundtable facilitator will help mind the queue. We want to be sure we have time to hear from all of our participants today, so please adhere to time limits during presentations and remarks.

We'll be providing timing queues to help keep us on track. We ask that you please keep your questions and comments on topic. Finally, we have designated

periods throughout the morning for questions and answers and discussion. So, please hold your questions and comments until those times. With that, I'm going to turn it over to Commissioner Vaccaro to start introductions.

COMMISSIONER VACCARO: Great. Thank you, Rhetta. So, whew. So, good morning everyone. I am Kourtney Vaccaro, a Commissioner her at the Energy Commission. And I would just like to warmly welcome everyone who is participating in and listening to today's workshop. I kind of wanted to start with, "Here we are again," and here we are again, but , I'm really excited about what we're going to be covering today, and the opportunity to really understand some of the important studies that are being discussed with respect to offshore wind, and also to hear from a number of stakeholder perspectives.

And while we've invited a number of individuals to participate today, we recognize here at the Energy Commission that there's so many other perspectives that are important and matter too, that we need to seek and that we need to learn from as we do this Assembly Bill 525 work, as well as the greater and broader offshore wind work here in California.

But today, the focus is really on the megawatt

offshore wind planning goals. And so, I think this is an appropriate group of attendees for that. So, in —— one, one final thing. Just as I am excited and very interested in the prospect of offshore wind, so too is Chair David Hochschild here at the Energy Commission. He sends his regrets, he's unable to participate today, but that is of course no indication of how important he believes offshore wind is for California's future.

So, in keeping with Rhetta's admonition, we're gonna go ahead and start the introductions. I spoke a little bit more, but that's just a little bit of the perk of sort of being the hostess today. But, if —— if you would, just stay in keeping with the admonition of name and affiliation, and there will be ample opportunity throughout this workshop for people to understand participant perspectives, roles, and the work that you do and your interest in offshore wind.

So, I think with that, let's go ahead and start introductions to my right. We'll go counterclockwise. We'll start in the room first, and then we'll go to the participants, principals, and principal designees that are participating virtually.

(Pause)

MR. GERACE: Hello. My name's Michael Gerace, I'm the Director of Planning and Community Development

for the Yurok tribe.

COMMISSIONER GUNDA: Thank you, good morning everybody. My name is Siva Gunda, I'm the Vice Chair for the California Energy Commission. As Commissioner Vaccaro mentioned, I'm just doubling for Chair Hochschild. He really sends his regrets, and he's tested positive for Covid, so he didn't want to infect any of us. So, thanks.

MS. MOORE: Hello, good morning everyone, my name is Jacqueline Moore, I'm Vice President of the Pacific Merchant Shipping Association, PMSA. We're a trade association that represents vessels that operate along the West Coast. So, very happy to be here.

MS. SREEDHARAN: Good morning, everybody. My name is Priya Sreedharan with GridLab, and I'll be presenting on one of the studies here. We're a nonprofit organization based in, in Berkely, California, that works across the country. Very, very nice to be here.

MR. PHADKE: Good morning, everybody. I'm Amol Phadke, I'm with the Goldman School of Public Policy, UC Berkeley. I will be presenting one of the studies today. Thank you.

MR. MILLAR: Good morning, Neil Millar with the California Independent System Operator.

MS. CROLL: Hi, everyone, Molly Croll with Avangrid Renewables. We're a developer of land based and offshore ——

(Pause)

UNIDENTIFIED SPEAKER: Is green ——

MS. CROLL: Am I just —— not leaning enough? There we go. Okay. Sorry about that. Molly Croll with Avangrid Renewables, developer of land-based and offshore wind, and representing my peers in the offshore industry today.

MS. DELFINO. Good morning, I'm Kim Delfino. And, I'm here representing the views of a number of conservation organizations, including Defenders of Wildlife, Audubon California, NRDC, Environmental Defense Center, Center for Biological Diversity, and others. Thank you.

MR. FLINT. Good morning, I'm Scott Flint with the California Energy Commission. I'm with the Siting, Transmission, and Environmental Protection Division.

MS. MATTOX: Good morning, everyone. My name is Jennifer Mattox. I serve as the Science Policy Advisor and Tribal Liaison at the California State Lands Commission.

MS. ECKERLE: Good morning. I'm Jenn Eckerle. I'm the Deputy Director at the Ocean Protection Council.

MR. CHUNG: Good morning, everyone. Steve Chung, Department of Defense.

MS. DEMESA: And we'll go ahead and turn to our virtual participants, starting with Commissioner Rechtschaffen.

COMMISSIONER RECHTSCHAFFEN: Good morning, Cliff Rechtschaffen. I'm a Commissioner at the California Public Utilities Commission.

MS. DEMESA: President Reynolds?

PRESIDENT REYNOLDS: Good morning, everyone. Alice Reynolds, President of the California Public Utilities Commission.

MS. DEMESA: Commissioner Reynolds?

COMMISSIONER REYNOLDS: Good morning, everyone. John Reynolds, Commissioner at the PUC.

MS. DEMESA: Commissioner Shiroma?

COMMISSIONER SHIROMA: Yes, good morning. Genevieve Shiroma. I'm a Commissioner on the CPUC.

MS. DEMESA: Mark Gold?

MR. GOLD: Mark Gold, Executive Director, Ocean Protection Council, and Deputy Secretary for Coast Ocean Policy.

MS. DEMESA: Amanda Cousart?

MS. COUSART: Good morning, Amanda Cousart from the Energy Ocean Resources and Federal Consistency

Unit at the California Coastal Commission.

MS. DEMESA: Thank you. Nicole Hill.

MS. HILL. Good morning, Nicole Hill with the Nature Conservancy, presenting the Power of Place to you today.

MS. DEMESA: Walt Musial?

MR. MUSIAL: Yeah, good morning. Walt Musial, I'm the Offshore Wind Research Platform Lead at the National Renewable Energy Lab.

MS. DEMESA: Nathan Barcic?

MR. BARCIC: Good morning. Nathan Barcic, Supervisor, Integrated Resource Planning at the CPUC.

MS. DEMESA: Mike Conroy.

MR. CONROY: Yeah, good morning. Mike Conroy, Executive Director of the Pacific Coast Federation of Fishermen's Association.

MS. DEMESA: Sofia Magallon?

(Pause)

Sofia may not have joined us yet. And then, we also have joining us a little later today, Jana Ganion.

And, Scott Morgan. My apologies. Scott Morgan?

MR. MORGAN: Yeah, Scott Morgan, with the Governor's Office of Planning and Research, and I'm a

member of the Governor's Military Affairs Council.

MS. DEMESA: And Chris Potter, Becky Ota.

MR. POTTER: Hi. I'm, good morning. I'm Chris Potter, I'm a Senior Environmental Scientist with the Marine Region of the California Department of Fish and Wildlife.

MS. DEMESA: Okay, are there any others on our roundtable joining us virtually today that I may have missed?

MR. BILLINTON: Yeah, it's Jeff Billinton with California ISO.

MS. DEMESA: Mr. Billinton, great, thank you. Anybody else?

Very full roundtable this morning. Alright, thank you.

With that, I'm going to hand it over to CEC's offshore wind subject matter expert and program lead, Scott Flint. Scott will be facilitating our roundtable presentation and discussions this morning.

(Pause)

MR. FLINT: Thank you. Thank you, Rhetta. Welcome, everyone. I'm Scott Flint, with the California Energy Commission. And, before we begin today, I want to briefly share a little background, and highlight the goals of the roundtable meeting this morning.

On May 6th, the Energy Commission staff published a draft report which includes proposed preliminary offshore wind planning goals of 3,000 megawatts by 2030, and a range of 10-15 thousand, 10,000 to 15,000 megawatts, by 2045. The draft report was prepared to meet the requirement of Assembly Bill 525, commonly referred to as AB 525, which required the Energy Commission by June 1, 2022, to evaluate and quantify the maximum feasible capacity of offshore wind to achieve reliability, ratepayer, employment, and decarbonization benefits. And, establish megawatt offshore wind planning goals for 2030 and 2045. The focus of today's workshop are the megawatt offshore wind planning goals that were established in the draft report.

Next slide, please.

Assembly Bill 525 took effect January 1 of this year, and created an accelerated timeline that requires the Energy Commission to develop a strategic plan for offshore wind in federal waters off the California coast. While developing the strategic plan, AB 525 also requires the Energy Commission to identify sea space, port, and transmission infrastructure and workforce needs to achieve the offshore wind planning goals, identify the economic benefits of offshore wind

as it relates to port infrastructure and workforce development, develop a permitting roadmap for offshore wind, and consider potential impacts and industry strategies to address those potential impacts on coastal resources, which we interpret to include marine ecosystems, fisheries, Native American and Indigenous people, and national defense, and other ocean users.

AB 525 requires the Energy Commission to complete the Offshore Wind Strategic Plan for California by June 30th, 2023. AB 525 makes clear that continuing to work with state agencies, the California Independent System Operator, stakeholders, tribes, and the Federal Bureau of Ocean Energy Management is a priority in developing the strategic plan, as is the opportunity for public participation in the process.

Next slide, please.

In establishing the megawatt planning goals, AB 525 requires the Energy Commission to consider the 12 specific factors listed here. Energy Commission staff assessed all 12 factors required by AB 525, and determined that while all factors are important in establishing megawatt planning goals for the Strategic Plan, five factors in particular, which are bolded here at the top of the list, have greater influence on shaping or affecting the megawatt planning goals than

others. The importance of these five factors was reinforced with and by our continued research, and each are discussed in detail in the draft report.

Next slide, please.

In response to this requirement, Energy Commission staff evaluated energy system modeling studies, consulted with other state agencies, including those responsible for transmission planning, and whose mission it is to protect the ocean and marine ecosystems and species. And then, identify technically feasible capacity and establish preliminary planning goals for the strategic plan. The primary studies examined for the key factors include these studies listed here, and for which —— and, we will hear presentations of these studies today.

Next slide, please.

The critical factor is the need for long-term transmission planning. Both the availability of existing transmission and the need to develop more transmission capacity in specific areas affect the onshore —— the offshore wind megawatt planning goals —— onshore, offshore —— that the Commission establishes.

The California Public Utilities Commission Integrated Resource Planning process, and the Independent System Operator's Transmission Planning

process examine energy resources by location and technology, and identify the transmission infrastructure and infrastructure upgrade needed to achieve the state's climate and energy goals.

They are designed to ensure that the energy system is developed and operated cost-effectively, while ensuring system reliability. As such, the outputs from these state planning processes provide information that informs both the maximum feasible capacity of offshore wind, and megawatt planning goals for 2030 and 2045.

For 2030, it's prudent for the AB 525 strategic plan to evaluate at least the current adopted 2032 Integrated Resource Planning amount for offshore wind of 1.7 gigawatts, as described in the draft report. Using assumptions of existing capacity and retirements, the California Independent System Operator analyses referenced in the draft report show that potentially up to 5 gigawatts of offshore wind capacity could be integrated onto the existing system with some upgrades, and most of this transmission capability is on the South Central Coast.

The development of new transmission capacity has been identified as necessary to deliver offshore wind power at significant scale from the North Coast to California load centers. By 2045, there is greater

possibility of achieving some or all the transmission upgrades examined by the California Independent System Operator, in studies that identify the transmission investments needed to integrate up to 14.3 gigawatts of offshore wind.

Next slide, please.

As explained in the draft report, in 2018 the Bureau of Ocean Energy Management identified three Call Areas. The Humboldt Call Area, the Morro Bay Call Area, and the Diabolo Canyon Call Area.

(Pause)

Both the 2018 Call Areas, and two additional study areas on the North Coast were influenced and informed by the National Renewable Energy Laboratory's identification work that was based on evaluation of windspeed, ocean depth, bottom slope, distance to grid connection, and distance to existing port infrastructure, and identified whether the areas are technically suitable for offshore wind.

They are all identified in federal waters within the leasing jurisdiction of the Bureau of Ocean Energy Management and are located outside the network of existing National Marine Sanctuaries and other marine protected areas.

(Pause)

The Bureau of Ocean Energy Management Call Areas, and the two additional North Coast study areas represent nearly 21,800 megawatts of technically feasible offshore wind potential, based on these existing studies. This number does not represent the quantification of the maximum feasible capacity for offshore wind. It simply represents estimated capacity of potential offshore wind that has been studied and considered in state energy planning so far.

Although elements of these five areas have been repeatedly studied from 2016 through 2021, additional evaluation is needed to ensure offshore wind energy developments would be located in areas with suitable sea space, whether from within these five areas or outside of them, that minimize potential impacts, maximize renewable energy production, and are technically suitable for development.

Next slide, please.

AB 525 requires the Energy Commission to consider potential impacts on coastal resources, including ocean resources and marine ecosystems, fisheries, Native American and Indigenous peoples, and national defense. And then, to identify strategies for addressing those impacts.

Current data and analyses show that avoidance,

minimization, mitigation, and adaptive management requirements for these potential impacts can directly affect the sea space available to meet the megawatt planning goals. The offshore wind megawatt planning goals laid out in the Energy Commission's draft report have not considered these potential impacts, and the Energy Commission will do so during strategic plan development.

As directed by AB 525, the Energy Commission will continue working with state, local, and federal agencies, stakeholders, the offshore wind energy industry, and related industries, and the California Native American tribes to complete this work.

In May and June, the California Coastal Commission conduced public hearings on the Bureau of Ocean Energy Management's consistency determinations for the leasing of the Humboldt Wind Energy Area on the North Coast, and the Morro Bay Wind Energy Area on the South Central Coast.

The California Coastal Commission staff reports analyzing the consistency determinations focused on the impacts associated with leasing and surveying activities and identified at a high level some of the potential impacts from development and operations of offshore wind facilities. And the staff reports include

conditions that establish a framework for addressing those potential impacts.

Coastal Commission staff found that future offshore wind development in the Wind Energy Areas have the potential to adversely affect marine resources through seabed disturbance, urban strikes, increasing entanglement risk, marine species displacement, increased ship strike risk, elevated levels of underwater sound, electromagnetic fields, and potentially weakened upwelling.

The Coastal Commission staff found that the fishing industry could potentially be impacted through the exclusion from fishing grounds, increased costs and time at sea to reach new fishing grounds, loss of ground for future fishing activity, and loss or disruption of harbor space and fishing infrastructure at ports.

Coastal Commission staff also found that offshore wind development could adversely and disproportionately impact environmental justice communities, because of the environmental impact associated with infrastructure development as well as California Native American Tribes that could be affected by impacts to culturally important places, species, and traditional marine fishing practices.

The Coastal Commission voted to conditionally

concur with the Bureau of Ocean Energy Management's consistency determinations for both the Humboldt and Morro Bay Wind Energy Areas. The conditions identified in the Coastal Commission's conditional concurrence reflects majors and processes identified as necessary for the Bureau of Ocean Energy Management leasing of federal waters for development of offshore wind to ensure that potential impacts described above are appropriately addressed.

Next slide, please.

As previously mentioned, on May 6th, the Energy Commission staff published a draft report which included proposed preliminary offshore wind planning goals of 3,000 megawatts, that's 3 gigawatts, by 2030, and a range of 10,000 to 15,000 megawatts, that's 10 to 15 gigawatts, by 2045.

These preliminary megawatt planning goals are established at levels that can contribute significantly to achieving California's climate goals. These goals reflect available data and science and evaluation of the 12 factors prescribed by AB 525, while acknowledging that the Energy Commission has yet to complete critical sea space analysis and identify minimization, avoidance, and mitigation of potential impacts.

In addition to these megawatt planning goals,

the Energy Commission draft report recognizes that by 2045, there may be sufficient technological development and related cost reductions driven by innovation in floating offshore wind components such as: advanced monitoring systems, floating platforms, mooring systems, flexible cabling, and increased turbine size. Such technological developments could support a faster rate of offshore wind deployment, and potentially support a larger megawatt planning goals of up to 20,000 megawatts, that's 20 gigawatts, between 2045 and 2050.

The megawatt planning goals will guide the Energy Commission's development of the AB 525 strategic plan for offshore wind. The planning goals may be further refined as the Energy Commission completes work identifying suitable sea space and identifying and evaluating potential impacts as well as other strategic plan topics.

On May 18th, the Energy Commission hosted a public workshop on the draft report and received public comment on it, both from the workshop and in the Energy Commission docket.

Next slide, please.

The Energy Commission received numerous comments recommending higher offshore wind megawatt planning goals than recommended in the draft report.

Comments made during the May 18th public workshop referenced specific studies released after the posting of the draft report that commenters interpret as supporting higher megawatt offshore wind planning goals.

This workshop will provide the Energy Commission, its state agency partners, stakeholders, tribes, and the public an opportunity to understand these other studies relevant to the draft report, and how they all relate to the AB 525 prescriptive requirements for establishing megawatt planning goals for offshore wind in consideration of the 12 specifically enumerated factors.

So, we will hear presentations from the authors of these reports, and some of the key reports that were used in drafting the report. And then, additionally, we have several stakeholders as well as tribal representatives joining the roundtable this morning to share their perspectives on planning for offshore wind, including establishing megawatt planning goals in light of the 12 factors, and observations of what is and what is not accounted for in the energy system modeling studies.

So, with that, we'll get ready to move into the study presentations. And, I'm going to briefly describe the roundtable format. So, for the round —— for

format of the roundtable, we will start with a series of presentations from the study authors. We plan to hold questions until all the presentations have been completed, and we will move into the discussion portion of the roundtable.

When we transition to the roundtable discretion —— discussion, we would like to start by allowing the study authors to ask technical questions and clarifications of each other, then we will open it up to the broader roundtable.

For the second portion of our roundtable, we will kick off with stakeholder and tribal participants who will each take five minutes to share their perspective on offshore wind energy planning, and AB 525 requirements. Following comments from our stakeholder and tribal participants, we will again open it up to the roundtable for additional questions and answer and discussion.

We are now going to move into the study presentations. As a reminder, to help —— for the speakers, and to help adhere to timelines, Rhetta will hold up time cards for those in the room, and will provide reminders for those online to keep us on schedule. I'm going to be sitting right by you too, and I might nudge you.

So, we have a lot to go through, so please attempt to keep it on time, but we'll help you out in a friendly manner. So, it may not seem friendly to you, but it really is a friendly manner. So, thank you for that.

With that, I'd like to introduce our first presenter, Walt Musial, with the National Renewable Energy Laboratory. And Walt's joining us virtually this morning. So, Walt, please turn on your camera.

MR. MUSIAL: Can you hear me or see me? I, I have my camera on.

MS. DEMESA: Yes, we can.

MR. FLINT: Yes.

MR. MUSIAL: Okay, good. Thank you. Are we ready to go, Scott?

MR. FLINT: Yes, Walt, go for it.

MR. MUSIAL: Alright. Thank you, Scott, and, and really, thank you for —— to the California Energy Commission and the Commissioners for inviting me to present the results of several studies that we've been working on over several years, actually. And, and thank you also to the Bureau of Ocean Energy Management, who has funded these studies and allowed us to, to reach, you know, increase the level of information that we have in, in this subject. And, it's still a lot going on.

So, thanks to everyone for that, and I'll try to give you a presentation of where we stand right now. And, as I, I believe there's work to be done, but I think we've identified a lot of the information that we were seeking, and I'd like to present it to you now.

So, if I could advance to the first slide.

So, these are the —— there was a few other reports, but these were the —— these are the three that I'm going to focus on. The first is a resource assessment of the outer continental shelf in California, that looks at the wind energy resource there. And then, I'll show you the key findings of that.

The second, is a cost study that was kind of done in parallel with that to look at the cost of floating offshore wind along the California coast, and I think the —— some of the study sites that were identified by Scott just now are the subject of a lot of the costs that we did, and I'll get to that and some of our conclusions, very high level, because I'm trying to do this quick.

And then the third, is a most recent report that we looked at, the options for delineation of the lease areas at both Humboldt and Morro Bay, and some of the issues that we found with assessing site capacity. It's not as easy as, as one might think sometimes. And

again, I want to thank the Bureau of Ocean Energy Management for their contributions in funding all of these reports.

Next slide, please.

So, the —— so I'm going to start with the resource assessment. And, this was a, a study that was done looking at —— this was data, it was modeled data, and we took it much further than anyone's done before. We looked at it at 20 years of hindcast data from 2000 to 2019. And using an ensemble approach, we coordinated with the PNNL, and the National Center for Atmospheric Research, who owns the model for weather research and forecasting. And, we ran these high fidelity and analyses, and gathered a data set that's five-minute time resolution, two kilometers, and you can access this report at the link below. Let me give you a just a little bit of insights into what we've learned and what we are still learning.

Next slide, please.

So, this is the, the map that we did. And you can see that the —— there's a large wind resource in the North Coast and along the Central Coast, which is what draws us to this. The —— we call this data set the CA20 data. We validated it when we started using the coastal radar system and near surface buoys. And at the time,

we didn't have any measurements that linked the data that we were generating through the models to actual measurements at hub height. And, we did uncover a problem that I'll tell you about in a minute. We did from this study, though, determine that the technical resource potential over the outer continental shelf, if we filter out low wind speeds below seven meters per second, or anything that was in greater depths than 1,500 meters —— we evaluated that resource to be about 200 gigawatts of potential.

That did not exclude any areas where, we know there are many, that might be conflicting with human use or environmental conflicts, or distances from shore, military and so forth. So, it's a big number, but it's, it's —— the actual potential is a lot less than that as, as you probably well know.

Probably the biggest issue that we found was that in the validations with the LIDAR that we got in 2021, a year after we did the study, showed a bias, and the next slide describes that. So, we're still working on this issue. But, there was a bias where some of these extremely high winds were probably not as high as the LIDARs are telling us.

And, so we're —— we have a new investigation that's going on right now. We're just starting it to

evaluate what caused the bias. We've, we used a lot of the same model setup that we use for the rest of the country, but we don't see that bias in other places. So, this is being revisited and, and reassessed. And, there'll be more results coming in, forthcoming in this year. But, if you can —— these charts here show kind of where we're at in that process of gathering measurements at hub height through the LIDARs that were placed out in Humboldt and Morro Bay.

And then the uh, the —— resolving those differences with the model data. And ultimately, what we're going to see is a, a new setup and probably more data coming. So, it's a caution to, when you look at the data for, for CA20, to use some discretion there. And we'll be updating that as we go.

Next slide, please.

But, the cost study is the next one I want to talk about, and this is the cover of that report led by Philipp Beiter. The study estimated the costs of offshore wind in California at these sites, and actually across the whole outer continental shelf where we had technical resource capability. We coordinated this with the California Public Utilities Commission and CAISO —— and we're using this now and they're using it in the IRP process. And the same five study areas that were

identified by Scott earlier, are in this study as well. And we looked at the CapEx, OpEx, the capacity factors and the annual energy production that would, that lead to these costs.

This was not a marine spatial planning exercise. We didn't do vetting of sites, and we're not —— we didn't intend to. So, this is just really a study of how much would it cost in these areas if other —— if all other things were evaluated properly. And, you can access this report at the link there.

Next slide, please.

In our evaluation of these, we —— so, you see these study areas again. Of course, there was Humboldt and Morro Bay, which are the current wind energy areas that are moving toward public auction. But there's also Diablo Canyon, which we call dormant because we're not looking at that anymore. And then the two study areas which are not officially anything other than capacity that is potentially there that, as Scott said, we made an attempt to avoid a known conflicts with environment and other things, but that doesn't mean that they've gone through any kind of marine spatial planning assessment yet. We also, kind of, chose these because they were the subject of other reports that were done earlier and we used the same areas.

Next slide, please.

So, I did an evaluation and kind of a summary of what we found. The costs ranged, and these are pretty low cost, but I think that they might change if/when we apply the new wind resource data. But $68 per megawatt hour to $57 per megawatt hour across the range of sites we —— those study areas that we looked at on average.

We did assume that there would be a port that would be a viable port that we could use in both Humboldt Bay and in Morro Bay, and I understand that those ports really —— that has to be identified still, and there's a lot of work going on to identify possible locations for a Central Coast port. We did find that Morro Bay had adequate transmission connection potential, and therefore it's probably easier to develop in that regard versus Humboldt, which is going to need transmission built to bring it down to load.

Again, the five study areas, and Scott alluded to this, the 21 gigawatts that are in those five study areas were evaluated based on our conservative metric of three megawatts per square kilometer. And where we get that, that's been our, kind of, our normal metric that we use to evaluate an undeveloped resource, because there's always a chance that that resource is going to

be reduced down because of hazards, or conflicts or other things, and to stay conservative, we use three megawatts.

But, I did a quick evaluation here because the industry norms for actual development are somewhere closer maybe to five megawatts per square kilometer, which is a big difference. And I compare these to two projects, which I referred to below. The Empire Wind project on the East Coast, which is actually planning an array density of five, no, 6.5 megawatts per square kilometer. Almost twice the density that we've projected.

And Dominion, which is the —— I picked these two projects because they were —— they use their whole area, and there's no residual. So, I can —— it's easier to determine the array. It's not always easy when they're developing part of the area. Dominion's array density was 5.8 megawatts per square kilometer, as it's being planned right now through their construction and operating plans.

So, those are significantly different. So, when I, when we did the study in that column that's circled in red, the total of all five areas was 21 gigawatts, roughly. And that's where we came out using the three, the three megawatts per square kilometer.

But, the most probable scenario, which is just outlined using just the Morro Bay and Humboldt areas, eliminating Diablo Canyon's capacity, gets you to about, about seven and a half gigawatts with just those two, if they develop the areas at 5 megawatts per square kilometer, which is becoming, kind of, the industry norm.

And it's not really —— there's no rules. There are some, maybe it's spacing rules on the East Coast.

MS. DEMESA: Five minutes, Walt.

MR. MUSIAL: Thank you, Rhetta.

MS. DEMESA: Just a quick reminder, five minutes.

MR. MUSIAL: Thank you. So, if the other areas that we've identified, or that we've studied, let's say, if the other areas that, that we've studied in Cape Mendocino and Del Norte were added, that would give a capacity of about 29 gigawatts for those areas, with Diablo excluded. And so, that just gives you kind of a rough feel for the capacities of these areas and, and how this might go.

Next slide, please.

So, the last report that we did and was the assessment of offshore wind leasing areas in California. And this study —— the objectives were to delineate the outlines of the Wind Energy Areas and reduce them to

approximately 1-gigawatt parcels that could be leased out with approximately the same value per lease area. And so, we tried to balance the advantages and disadvantages that we saw among these lease areas. And some of those had the wind speeds, the wind directions, the blockage affects, the geo hazards that were in there. And we came up with some recommendations working very closely with BOEM on this. And you can find that report online, it's on the BOEM website and at this link below.

And then I can go to my, I think my last slide.

These are the options that were looked at and from Morro Bay, the 3b option, which was —— that was our designation, was used. And this, just to give you a kind of an example of the kinds of struggle and challenges that we're seeing —— the capacity of that area varies quite a bit depending on what your assumptions are about the technology that's being used, or the spacing of the turbines that are within those areas.

So, we looked at two different spacings, and four different technologies for mooring types. And, depending on what you chose for those assumptions, we got a range of capacity for Morro Bay that ranged from about five and a half gigawatts to about 2.8 gigawatts.

And the 2.8 gigawatts was based on a really conservative wide spacing using catenary mooring lines, which have a larger footprint and take a lot more area.

But if you use a technology with a smaller footprint for the mooring technology, and space them closely, more closely, which you can along the rows because the wind direction is pretty consistent from north to south with not much variability. The option to get to a higher density in those areas is probably what I would expect a developer might be interested in doing. I have no idea what they'll actually do but it's feasible for these capacities to increase to these levels.

And that's, let me see if my last slide, I think maybe is just a wrap up. So, the mooring line spacing, the mooring line footprints and the anchor spacing, is a key variable. The wake effects due to turbine spacing is a variable, but it's really how many —— how close are the turbines along the row, and how close are the rows together. We didn't find too much differences in the geohazards because they can be worked around. There are definitely several that we could talk about. And then the access to the ports and transmission depending on which side of the Wind Energy Areas you're on makes a difference in cost, but it's not

a showstopper.

So that's my, that's really where I want to wrap up, and I'll turn it over to the next speaker.

MR. FLINT: Thank you. Thank you, Walt. That was a quick run through a whole bunch of work. Our next presenter is Nathan Barcic, from the California Public Utilities Commission. And, Nathan's also virtual, so Nathan, please turn on your camera and microphone.

MR. BARCIC: Thanks for everything, Scott. Can you hear me?

MR. FLINT: Yes, sounds good.

MR. BARCIC: Okay, good morning everybody. My name's Nathan Barcic, Supervisor for Integrated Resource Planning at the CPUC. Just going to give a quick overview of IRP, the analysis that we do, the tools that we use and how it relates to offshore wind.

So next slide.

IRP overview. IRP was established almost seven years ago by SB 350, which is kind of crazy to think about from my point of view. It acts as the CPUC's, and thus about 80% of California's, electricity loads resource planning process. The process has two main parts. The first is, we identify an optimal portfolio of resources, usually by modeling, and provide it to our LSE's for their integrated resource planning

development. The second step is to aggregate all of that LSE plan information, testing it for things like reliability, GHG, et cetera, and ordering action such as procurement, if we need to.

In the next slide, you'll see a bit of a, a diagram that I'm not going to go completely in depth on, because there's a lot of information in here. The main point is that IRP coordinates with a lot of other processes and entities regarding resource planning and resource procurement. A typical IRP cycle takes about two or three years to run. It involves multiple analyses and multiple opportunities for stakeholder engagement and feedback from our stakeholders on things like modeling inputs, analysis, proposals, and resource portfolios.

Next slide.

You'll see that IRP analysis is pretty model focused. The analysis that we produce is used to undergird the IRP process and informs decision making for infrastructure investment, such as the 3.3 gigawatt order from November of 2019, and the 11.5 gigawatt order from last June. But also, in kind of less direct ways, such as the portfolios that we map and pass over to CAISO for transmission study and potential authorization.

On the next slide, you'll see brief descriptions of the two models that we use. The first is for capacity expansion modeling, you've probably heard of it. It's called RESOLVE. The thing that RESOLVE does is the optimization process that I described a couple slides ago, which is basically the identification of new resources needed to meet future constraints, such as GHG targets or reliability targets, and doing so at least cost. So, which of all these possible future options is actually the least cost?

The second model that we use is called SERVM. We use it to conduct production cost modeling. This is a much more detailed check of the system. So, RESOLVE can spit out a portfolio of optimal resources, we would then put it in SERVM to run it and see in more detail what sort of things happen from reliability, GHG, and other perspectives.

Literally thousands of assumptions go into our modeling. A lot of you are probably familiar with our inputs and assumptions development process. I think Walt covered quite well the germane assumptions a couple of minutes ago that we use for offshore winds, which basically all derive from the various studies that he had described earlier.

There will be an opportunity for stakeholder

engagement later this year, in all likelihood, on an update to those inputs and assumptions. So, Walt, we might have a point of coordination going forward if you have new information, but we can follow up offline about that.

On the next slide, you should see a chart that shows the most recent Preferred System Plan, which is a portfolio of resources out through 2032 that was adopted in the February decision. It includes a lot of new resources by 2032. You can see that in the stacked bar charts here. Notable for this group is the 1.7 gigawatts of offshore wind included by the end of this time horizon.

Now my last slide.

We can show you, how do we interface with transmission planning?

IRP produces portfolios that include indicative transmission results, which then undergo mapping, a process we call busbar mapping, down to the substation level before we transmit it to CAISO for their analysis to kick off in TPP.

The portfolio we passed to CAISO for the 2021-2022 TPP led to significant transmission authorization that we describe in that sub bullet. And also, as part of the '21-'22 TPP, we asked CAISO to study a portfolio

that includes 8.3 gigawatts of offshore wind to find out what happens, transmission wise, if you put that much offshore wind on the system in the next ten years?

The results are meant to be informative for future planning activities, not necessarily a reflection of what we thought was the most realistic, but just to, kind of, kick off a technical conversation about what things do we need to look at in the future if we're going to be going big, quote unquote, on offshore wind.

Also note here that the CAISO published a 20-year study that included a little bit more offshore wind than the sensitivity I just described. And, also note that in a couple days, CPUC is actually going to be transmitting CAISO a high electrification sensitivity based around a 30 million metric ton GHG target that was described in our February Preferred System Plan decision, so that CAISO can study what happens under those conditions, and going out to 2035 in all likelihood as a sensitivity in their current '22-'23 TPP, and that case is likely to include more than three gigawatts of offshore wind in 2032 and as high as 4.7 in 2035.

And that's it for me, Scott.

MR. FLINT: Thank you, Nate. Thank you, Nathan. We'll move to our next presenter, Jeff

Billinton, from the California Independent System Operator. And, Jeff is also virtual, so Jeff, if you're ready. I see you.

MR. BILLINTON: Yeah, I'm ready. Do you want to go to the next slide?

MR. FLINT: You sound good, Jeff, Thanks.

MR. BILLINTON: And, and then —— yeah. And you can go to the next slide as well. So, as, as we're going through the —— the ISO, we conduct an annual tariff-based transmission planning process to assess, kind of, the needs and approved solutions for reliability, policy, and economic driven transmission. This is conducted on a ten-year planning horizon, but it's not limited to the ten-year horizon.

And, and as Nathan indicated, one of the key inputs is, is the portfolio is —— we have a base portfolio, and sensitivity portfolios that we assess as part of this. And, and another key input is the CEC's long-term forecast. And then also, as Nathan indicated, this past year, the ISO issued its first 20-year transmission outlook in May of 2022, with the intent to, kind of, to help the state to further refine resource planning, and to scope the challenges that we face, as well as to provide longer term context for decisions made in the, in the ten year planning horizon.

Next slide, please.

So, as, as was indicated by Nathan in the 2021-2022 transmission planning process, we studied a sensitivity portfolio that the CPUC provided. It looked at, really, is 8.3 gigawatts of offshore in a detailed analysis, and an additional is 12.8 —— actually ni——, it's not 12.2, it's 12.8 gigawatt of offshore wind in the North Coast for a higher-level assessment.

In, in addition, in the 20-year outlook, we use the SB 100 starting point scenario that was docketed by the CEC, and that included a 10-gigawatt of offshore wind. And in an analysis, that was based, on the analysis that we did in the 2021-2022 transmission planning process.

Next slide.

So, in the sensitivity, and this is similar to exactly what would —— was, was presented in both cases, in both the previous presentations. In the Humboldt area, we were looking at 1.6 gigawatt. In the Diablo Call Area area, it was 4.4 gigawatt, and in the Morro Bay 2.3. And then in that higher-level assessment with the 14.8 or the 12.8 gigawatt of additional, there was 6.6 in the Del Norte area and 6.2 in the Cape Mendocino. That comes to the 21 gigawatt that we've been discussing.

Next slide, please.

For the, for the Central Coast area, this is one of the things, and it was mentioned as well. In that area, there is significant transmission, 500 kV transmission in the area for the Central Coast. And we identified that about 5.3 gigawatt of resources could connect to that 500 kV system with the retirement of the Diablo nuclear power plant without upgrades. And then, to go to the 6.4 gigawatt in the, in the portfolio, the sensitivity portfolio, we looked at three different alternatives identified here of potential solutions to meet that higher capacity.

Next slide.

And then, as was indicated, again, in the North Coast area, the transmission is not anywhere near the coast, it's more in the central area where we have the 500 kV coming from Oregon down into California. And so, to look at —— we looked at three alternatives. One, being a 500 kV AC connection over to the existing 500 KV system. But that also would require some additional reinforcement on that 500 kV system to accommodate the increased capacity in that area.

Next slide, please.

With this one, we looked at basically a sea cable coming from the Humboldt area down into the Bay

Area, and then from a collector station there to supply into the greater Bay Area existing transmission system.

And then, if you look at the next slide, the third alternative that we looked at was basically a conventional HVDC. It could be overland or a sea cable, connecting into the existing Collinsville substation, or the, the Collinsville substation that was recently approved in the 2021-2022 transmission plan.

And if you go to the next slide.

When we looked at the outlook for the additional capacity, so 14.4 gigavolt with Humboldt and, and the two other Call Areas needing significant transmission, and that needing the 500 kV that we —— effectively the alternatives that we looked at for those three. The 500 kV AC, we would need to HVDC conventional cables, as well as two HVDC via sea cables. And some of those, as we looked at it, how would it connect would be similar to what we identified to the 500 to Collinsville and into the Bay Area. And, as we look in the interconnection, that's one of the things, depending on timing and sequencing, how the, the different Call Areas will be interconnected together.

And, if you could go to the next slide.

When the 20-year outlook —— we looked at, like as I indicated, 10-gigawatt that was in the SB 100

starting point scenario, with about six gigawatt in the Central Coast area and four in the North Coast area. And, and as has been indicated, the Humboldt area and the Morro Bay Area, the current that are in the development for leasing by BOEM.

And if you go the next slide.

This just provides a little bit of, of context. To go with a 4-gigawatt, you would need two alternatives that we've, we identified out of the Humboldt area alternatives. Be it in terms of a 500 kV AC and, either a BSC or a HVDC classic type connection. In the Morro Bay, as we, we indicated, we'll be able to connect it to the existing 500 kV in the area.

And then as we look at, at some of the things ——as we consideration is, is there potential for offshore grid development that could help strengthen the interconnection to the Pacific Northwest as we look at those northern coastal?

If you go to the next slide, please.

This, this is, as Nathan indicated, for the 2022-2023 transmission planning process, which is the current process that we have underway. The base portfolio includes just over 1,700 megawatts of offshore wind; 1,500 in the Morro Bay area, and there's 12 —— 120 megawatts in the Humboldt area that's, that's as an

energy only resource.

And as Nathan indicated, we will be conducting a sensitivity study based upon a portfolio that the CPUC will be providing us, and also based upon the CEC's adopted high transportation electrification scenario, and the ISO will be holding a stakeholder call for, for this on July 6.

So, I think that concludes the slides, Scott. I can turn it back to you.

MR. FLINT: We'll move right on to our next presenter. Our next presentation comes from Priya Sreedharan, from GridLab.

MS. SREEDHARAN: Morning, everybody. Delighted to be here and, and share the results of our study. Can you go to the next slide, please?

I wanted to introduce the partners in our project, Energy Innovation. So, basically, we had a technical study, which you'll be hearing a little bit about today. We also had a policy report which our partners at Energy Innovation have developed. GridLab, which is my organization, managed the technical study, and our partners at TELOS Energy conducted a majority —— all of the PLEXOS simulations, the results of which you'll see, as well as the renewable energy data development.

California Energy Commission was an advisor on the project. They were also a member of the technical review committee. And, had also provided the original PLEXOS model that was, you know, a bulk of the analysis that we conducted.

Next slide, please.

So, I wanted to give you some context for the study. So, SB 100 identifies a goal 100 percent by 2045. In December of 2020, the joint agencies, California agencies, released the SB 100 report that showed that it would be possible to accelerate this timeline to 100 percent carbon free power by 2030 or 2035. But, they also noted that additional analysis was needed.

In that report, they emphasize that the reliability impacts of an accelerated timeline have to be studied with more detail. And that's where our study comes in. And we are trying to be responsive to that gap that was identified and provide complementary kinds of analysis, and of course, not preempt some of the other good analysis and studies that are being conducted. So, I just want us to sort of keep in mind the context of this particular study.

Next slide, please.

So again, our objective was to identify what

the reliability impacts could be of accelerating this timeline. And specifically to do that, we aim to identify an interim goal in 2030. And we picked 85 percent, and essentially landed on an 85 percent clean electricity target, with the original goal of identifying a target somewhere between 80 and 90 percent clean.

The analysis that we conducted was essentially two parts. We actually, for consistency purposes, we used the RESOLVE modeling tool that was used for supporting the joint agency's SB 100 report. We used that tool to build different portfolios, and we looked at three different portfolios. There's more details on these portfolios in subsequent slides. A little bit of tweaking for two of the portfolios outside of RESOLVE, of course, but the purpose was to take those portfolios, and then dig into the reliability impacts using an operational tool.

The tool that we used is PLEXOS, which is a production cost model. And there was a two-part to doing the PLEXOS analysis. The first was taking these portfolios, and then looking at how these portfolios would perform against multiple weather years, marching through every hour, 8760 chronological modeling.

The second step was to say, you know, well

what if different kind—— what if the grid was faced with different kinds of conditions? What if, for example, we have a low-hydro year? What if we have more weather variability? You know, what if we were to retire some of the, the thermal fleet? Would those portfolios, under an accelerated clean electricity target, still be reliable? And so, that what if, sort of, analysis is really the bulk of our study.

Next slide, please.

So, this describes the three portfolios. And again, these were developed using the RESOLVE version that was supporting the SB 100 study. So, the first portfolio, which we call a base case, essentially was developed by, you know, inserting a 75 percent RPS target in 2030 in RESOLVE. And the rest of the assumptions are consistent with that tool. We wanted to then deviate from that base portfolio and look at the impacts of, of different elements that could be a part of that portfolio.

So, the second portfolio, which we call our diverse clean resources, was built specifically to understand, well what if the clean energy mix was augmented with clean, firm resources? We picked geothermal as a proxy for clean, firm, and we picked it in the order of 2 gigawatts.

And we also wanted to look at the value of diverse —— other diverse clean resources, namely offshore wind. And we picked the number of 4 gigawatts. I want to emphasize that our analysis was not trying to advocate for a specific number of offshore wind or geothermal resources. We weren't conducting a feasibility analysis in terms of, well, is more resources of offshore wind possible? Or is less? So, we're not trying to, you know, put our mark on this being a representation of a minimum or a maximum, but we consulted with some of the various studies that were there.

We also had an excellent technical review committee that included multiple expertise across the industry. And 4 gigawatts and 2 gigawatts were determined to be reasonable numbers to use in these two portfolios that were augmenting the base portfolio analysis.

The third portfolio actually builds on the first two portfolios. And we add on to the amount of electrification that is otherwise assumed in the base case, both in the form of vehicle transportation electrification, as well as in the form of building decarbonization.

In this slide, you also see the specific

numbers that constitute the offshore wind assumptions in Portfolio 2 and Portfolio 3, and those include resources located at Humboldt Bay, Morro Bay, as well as Diablo Canyon. So again, just want to underscore the purpose of our study was really to understand the tradeoffs in terms of the reliability performance between these different portfolios.

Next slide, please.

So, this gives you some sense of what makes up these portfolios. Certainly, solar, storage are a big portion of these portfolios, including both utility scale solar as well as behind the meter solar, which is consistent with the assumptions in the California Energy Demand Forecast. The difference, of course, that you see is in terms of the offshore wind and geothermal that were added to Portfolios 2 and 3, the diverse clean resources and the high electrification portfolios. And what we found when we added those portfolios, was that the amount of utility scale solar was greatly reduced.

In fact, in terms of the new additions that were required and estimated by RESOLVE was reduced by about half. And that, you know, that was actually a very, very interesting finding from, from that analysis. So again, we're, for the most part, still in the world of identifying these portfolios, building these

portfolios in RESOLVE.

Next slide, please.

So, this just gives you a sense of, you know, what the future buildout rates need to look like for solar, for wind, for firm resources, relative to what the historical trends have been. And, the key insight that I want to highlight here is that with a diverse clean resources portfolio, the recent trends in terms of solar developments could actually continue and are aligned with the trends that we would need to, to hit those future buildout rates under the diverse clean portfolio buildout.

Under the base portfolio assumptions, the rate of build out of utility scale solar would need to accelerate. And, with the addition of the diverse resources in the high electrification portfolio, what you see is that those rates would actually be somewhat stabilized. So, comparable rates between the high electrification and the diverse clean resources portfolios with the inclusion of the diverse clean resources in both of those portfolios. You do see, of course, a bit of an acceleration in terms of the wind buildout, and that's of course, and firm resources buildout, which is by design.

Next slide, please.

So, this is where we get into the real, the, the meat of the study. And as I mentioned, there are two parts. One was developing these portfolios, and then the second was evaluating these portfolios in PLEXOS, our production cost model, to understand what the reliability impacts are.

We did base runs. So, taking those portfolios and testing them against multiple weather years. And then, we asked these, sort of, "what if" questions. What if the power grid was influenced by, or impacted by, these sort of stress conditions? We call it stress testing.

Between the combination of weather years and between the, the different sensitivities or stress cases that we ran, and the number of portfolios —— we had over 200 simulations. So, a lot of data that we're trying to mine through to understand what these results will teach us. And I will mention, just for completeness, one of the sensitivities is not really —— it's not a stressor to the grid, it's actually a benefit to the grid, and that's demand flexibility.

Next slide, please.

I'm going to spend very little time on this slide. But, I just wanted to give you a sense of well, what —— how do you assess what you learned from these

simulations? So of course, running through all 8,760 hours of the year, we want to understand —— are we able to hit the clean electricity target that we had anticipated?

The other two metrics, which I won't describe in detail, are, were essentially our two primary metrics for understanding reliability impacts. Natural gas margin was developed to understand, you know, how dependent are we on economic imports? And if those weren't available, are we able to meet California's needs? And then, the WECC hourly reserve margin was developed to understand, you know, what's going on in the rest of the West when we're dependent on those economic imports?

And, there are a lot of details in the study that, that show the results of those metrics. But, I want to actually jump to the next slide and run through what our core findings were.

So, the bottom line of the study. Under the different, with the different assumptions, the portfolios, and the different, you know, stress conditions that we analyze, we were able to keep, you know —— we found that the —— an accelerated future clean system is able to operate fine, is able to keep the lights on. And so, that was really, sort of, the

underlying, the bottom-line message from the entire study.

We threw many, many things at the system. We retired a whole bunch of gas in one of the sensitivities. We retired all the coal across the WECC in one of the other stress cases. And you know, and we even, you know, emulated the August 2020 conditions. And what we found is that, for the most part, we're able to keep the lights on.

I should have mentioned this in one of the earlier slides, one of the stress conditions actually threw everything at the grid. What if all of these stress conditions were combined? And is the grid able to still, you know, still able to serve load and keep the lights on? And, and we found that it was.

These findings go through a lot of details, but in the context of this particular workshop, I just want to emphasize the second finding, which was on the, the benefits of the diverse clean resources. And what we found was not only, as I mentioned earlier, the inclusion of geothermal resources and offshore wind was able to lower the requirements of utility scale solar.

We also found that there are reliability benefits in terms of less dependence on in-state gas, in terms of less dependence on economic imports, and better

matching of supply and demand, which also resulted in less losses from our storage resources. And there are additional points that we discussed in the report such as the, you know, instantaneous dependence on inverter-based resources, and what that means from a grid operations perspective.

And so that's really, I think, in the context of this workshop, that's really the —— the other key message that we want to take is that we did observe a number of, a number of benefits from diverse clean resources when we went through all of this analysis.

Next slide, please.

Debating whether I want to say anything here. I think in the interest of time, and I have one minute left, I think we can —— you all have the slides, happy to answer any questions on any of these findings. The report does talk a lot about the impacts on how we do planning, not just California, but broadly, and how we think that this kind of stress testing approach towards understanding reliability impacts is —— it's different. It's complementary to the kind of analysis that's typically done.

Our friends at the CPUC describe their process of RESOLVE and SERVM, and this is a separate type of analysis that's not —— that's complementary to the

resource adequacy kind of analysis that SERVM and some of these other RA tools can conduct.

So, I will, I think, maybe just one more slide, and this contains the links to our study as well as the fact sheets. There's a wonderful data visualization that was developed where you can look at some of the results in graphical form. And I will mention that we brought on an atmospheric scientist to do some deep diving into those low RE periods that we observed. And, this is going to be an issue we're going to have to understand with more rigor going into the future. So that's the companion report, just wanted to mention that report as well. And, I think with that, I will, I will conclude my presentation. Thank you very much.

MR. FLINT: Thank you, Priya. Our next presenter is Amol Phadke, from the Goldman School of Public Policy at UC Berkeley.

MR. PHADKE: Alright. Thanks for inviting me, really excited to be here. I'm Amol Phadke, I'm a senior scientist and affiliate at the Goldman School of Public Policy. I have over 20 years of experience in the energy sector, and —— where I have led several national and international studies on accelerated decarbonization of our power and transport sectors. One

exciting study, in fact with GridLab, which looked at how you decarbonize the US power system by 2035, which I believe informed the current administration's goals of 100 percent clean power by 2035.

And we have been obsessing over offshore wind for the last two years. Partly watching some other world's YouTube videos saying how great that technology is, but also partly driven by some very exciting empirical evidence of how much the offshore wind costs have come down in terms of auction prices, how big the turbines have gotten. But also, from a realization that looking at if you're really gonna hit net zero goals around the world, trying to understand —— getting the realization that we just need so much more clean power. So, we really have to think about significant additional resources that can complement land based solar and wind.

Next slide, please. Actually, could we go to the next slide.

So, I do want to —— so in that context, when we heard about AB 525, we got really excited. We said, they're looking at this all around the world, maybe we should look at how much —— what role offshore wind can play in our home state? And before we kind of jump into the study, I wanted to kind of give a context of what is happening all around the world on offshore wind and what

some of the goals look like in similar jurisdictions which have similar decarbonization goals.

So, for example, UK, which is basically very similar size as California's power system, has an offshore wind target, which is 10 times or 15 times that of California by 2030. They have offshore wind goal of 50 gigawatts by 2030. Let's look at China. China built, last year, more offshore wind, just last year, more offshore wind than the proposed target by 2045.

So, this —— and even, like, countries like Poland and India are getting into the game and really trying to deploy offshore wind. So, we, we wanted to understand, like, what does a scaled up implementation of offshore wind look like in California in that context?

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So, we were trying to understand, okay, what is really driving some of this excitement around offshore wind? And, part of the reason, as an economist we think it's a lot driven by its competitiveness, if deployed at scale. So, if we look at some of the recent auction prices in Europe, they have already achieved $50, $60 per megawatt hour auction prices in Europe. I mean, that is extremely competitive, especially for a

resource that is producing power during nighttime hours. So, I feel that one of the key excitements around offshore wind is because of its competitiveness.

The other thing that is very important to note is that how much our projections of what offshore wind can deliver also have changed. So, we follow NREL —— NREL's annual technology baseline, which is kind of the gold standard for projections. If you look at their 2015 projection, and their 2021 projection, those are vastly different. And the 2021 projection is vastly more optimistic in terms of what offshore costs could be, or what offshore costs are. So, this gives us hope that offshore wind, potentially, can be a very competitive resource.

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So now, bringing this back to California. We looked at the Joint Agency Report, SB 100. It was an excellent report in terms of very detailed assessment of all the clean portfolios. It is currently primarily solar PV plus storage portfolio. And importantly, it does identify the need to create a more diverse portfolio.

But, we also observed is that in reality, we may actually need a lot more clean power than is currently being planned in the SB 100 planning process.

Two reasons. First, the CARB's scoping plan for a net zero economy says that we will need about 40 gigawatts equivalent of PV to produce the green hydrogen that is required to decarbonize the grid. That is currently not in the process.

Second, CARB's scoping plan also mentions that we will need about 80 to 100 million tons of direct carbon dioxide removal in order to meet the net zero goal. Carbon dioxide removal is extremely energy intensive. Our back of the envelope shows that that is equivalent to 50 gigawatts of PV.

So, if we are really to meet our goals in addition to what is being planned under SB 100, you could be talking about hundred gigawatts of more PV. We have not even touched the implication of a significantly low hydro year. We have not even touched the significant implication of a huge rebound in the air conditioning demand. So, this was kind of our motivation. Think that it appears that we really need to think about offshore wind at a very different scale.

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So, I'm not gonna nerd out on this slide. My, my team has warned me, please don't end your presentation on this slide. But we basically deployed, you know, the best, you know, analytical and

computational machinery that we are proud of, to this problem. And we, we followed a very standard method.

So basically, we used NREL's flagship model ReEDS. They have done a phenomenal job, which is similar to RESOLVE, but it is fairly additionally high resolution to understand the capacity expansion scenarios. And then we used good old expensive PLEXOS to kind of check the operations of the system to make sure that the system operates under all the kinds of scenarios we are running. So, we used a combination of ReEds and PLEXOS to really assess. So, we are currently using probably some of the gold standard methods that are out there.

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And, you know, we love to run scenarios. So, I won't again bore you with that. But the point is that, we, we —— our objective is to assess what is the —— what is the impact on the total system cost and operations of deploying increasing amounts of offshore wind starting from 10 gigawatts to 100 gigawatts by 2045? That's kind of the objective.

Next slide.

And, we looked at, we did the PLEXOS analysis, the grid operation analysis for two cases, but impossible to run all these cases with limited amount of

time. So our four, like the BAU case is the current policy case which is very similar to SB 100, which is primarily solar plus storage driven, and then there is a 50-gigawatt offshore case for which we checked the operations of the system.

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So, here are kind of our key findings of this study. First, we also did bottom-up resource assessment following NREL's method. And, we again, kind of, came to a very similar conclusion that California has one of the best offshore wind resource potential in the world, or in the country for that matter.

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So, the potential has two aspects. First, I think there is enough technical potential. We have similar numbers of 200 gigawatts, and I can talk more about the exclusions we used and not used in Q&A. But more importantly, the profile is just beautiful. I feel that the profile is evening peaking. It produces consistently during winter months, but it's also summer peaking. So, as power systems modelers are trying to obsess and cannot fill the gaps of renewables, this resource fits quite well.

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So, I want to put a cautionary note on exclusions, because we did not consider all the exclusions. We did have some exclusions. We did the best job we could, but we cannot claim that we have considered all the exclusions.

That being said, so we did consider some exclusions. We found 200 gigawatts. We have not considered all exclusions. But I would like to make three points.

First, is that the current technical potential is based on current technology. Right? So, we also did a thought experiment. What would the potential look with new technology? So, we relaxed the constraint of depth going from 1,000-meter depth to 3,000-meter depth. 3,000-meter depth, they have already developed oil rigs at 3,000-meter depths. The potential doubles. So, from 200 gigawatts it could be 400 gigawatts, if you just relax the depths constraint.

Now, I —— it was really nice to hear from Walt that energy density, he thinks, could be much higher. From three megawatts to, say five megawatts or six megawatts. That is also a doubling of potential. There is significant potential in Oregon as well.

So, I think we have a really amazing opportunity that we can potentially find because we have

like —— if you multiply all these factors, we're talking about 800 gigawatts of potential with future technology. So, we have an opportunity to find 50 gigawatts out of it, which kind of protects the environment and takes some of the social issues into account. Is there a guarantee, no. But, given that they are starting from a much bigger pool, there is an interesting opportunity.

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So, here is the finding that we are —— so first finding that we are very excited about is there's a lot of potential with current technology that has a potential to grow multifold with future technology, so there's an opportunity to find something amazing. Then, the other most important factor is consumer cost impact. Because yes, you can have amazing technology, but if you deploy that and if it increases consumer costs, then there are significant challenges. But what we found, was that deploying up to 50 gigawatts of offshore wind increases resource diversity significantly at comparable or lower total system costs, or wholesale electricity costs.

And the results are primarily driven by declining cost of offshore wind, but are also driven because of its profile. Because solar can only provide

support during daytime. There will be a lot of load during nighttime. So, offshore wind kind of provides that amazing complement.

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So, why 50 gigawatt, I mean that's just one recommendation, is that you sufficiently add to resource diversity, say 30, 40 percent resource coming from non-solar. You need that kind of capacity. Anything below that, yes, it does add to resource diversity but it's like 10 percent or 15 percent, and with significant additions.

Now this doesn't take into account the 100 additional gigawatt of PV equivalent load that we're going to need for hydrogen, and we are not —— we're gonna need for (INDISCERNIBLE). So, if you take that into account, our kind of gut reaction is a 50 gigawatt provides a reasonable resource diversity without increasing wholesale costs.

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You need significant investments in transmission and that ReEDS model does take into account. It is included in the cost. But, I believe that there is an opportunity to cut transmission costs significantly and timelines, by developing this

technology at scale, thinking about a backbone seabed transmission. So yes, transmission costs are significant, but there's an opportunity to cut those costs.

Next slide.

I'm not going to go into the details, but we also did very similar simulations as Priya mentioned in terms of stress testing the grid and we find with significant offshore wind you need less solar, but also less storage, because it is providing that nighttime support.

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So, this is, kind of, our bottom line conclusion. I need to —— this is an older version of the slide, so I —— So, our kind of bottom line recommendation is that you should consider a 5 gigawatt, 15 gigawatt, and 50 gigawatt target by 2030 2035, and 2045. And in context, UK has a target of 50 gigawatts by 2030. And, this target, I believe probably is not going to be enough. I think there needs to be a procurement mandate to really signal economies of scale and drive down costs. This game is about economies of scale.

And lastly, one should evaluate how to put

proactive transmission, and it's really nice to hear the ISO presentations. But there's a great opportunity to do proactive transmission planning to really cut down timelines and cost. So, I think it's very exciting that California is blessed with such a resource. I think the proactive planning, and the right level of ambition, I think we can really contribute to advancing decarbonization. Thank you.

MR. FLINT: Thank you, Amol. Our next —— our next presenter and, presenting the last study for this morning is Nicole Hill from the Nature Conservancy. And Nicole is joining us virtually also. So, if you're ready, Nicole ——

MS. HILL: I'm ready.

MR. FLINT: ——turn on your camera.

MS. HILL: Great. Next slide.

MR. FLINT: You might be a little —— can —— can you put the volume up just the hair? If not, we'll, it'll work, but.

MS. HILL: I'll try and get closer and speak louder.

MR. FLINT: That's good. Thank you.

MS. HILL: Super. All right, next slide please.

So, good morning, everyone. I wanted to share

some of the Power of Place West results that are in a forthcoming publication with The Nature Conservancy. Many of you may be familiar with the Power of Place report the Conservancy developed in 2019. The original Power of Place report was intended to inform SB 100's clean energy goals, and the finding of that study emphasized the need for comprehensive planning approaches and illustrated the scale that infrastructure development might be needed to meet the goals of SB 100.

The findings of the Power of Place California report also highlighted a few areas that we explored in the West's report. One of those is the need to include emerging technologies. At the time, we didn't have a lot of data around carbon capture, battery storage, biomass, and offshore wind. So, we've included that in the West study. And also, the need to understand the land use implications if every state in the Western interconnect were to set economy-wide carbon neutrality goals.

So, next question. Or, next slide, please.

So, these are our partners in this study. We started this work in 2020. We're releasing it probably mid-August this year to the public. Our research partners include Evolve Energy Resources, Montara Mountain Energy, and Jazz Energies. We —— those are the

folks that helped us develop these detailed technology, infrastructure, and land use pathways to quickly achieve both our climate and clean energy goals in the West, but also our conservation goals as the Nature Conservancy.

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So, just a few, few principles that guide our work. We're working to develop solutions that are better for nature and people. We're committed to ensuring reliability and affordability in this energy transition. We know that scaling up clean energy solutions will require innovation in both policy and technology. And, the Conservancy is committed to a clean and equitable transition that accounts for past and current inequalities in vulnerable populations.

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So, the two primary studied questions that I'd like to share with you today revolve around the implications of land use, around net zero targets, the cost and benefits associated with protecting natural and working lands.

The study has also included some considerations associated with the goals that were set under AB 525, they're worth noting here too. We started this project in 2020 prior to AB 525. But we have included a summary of the suitable areas and total

capacity for offshore wind generation on the West Coast, which includes California. We've also evaluated all those suitable areas for impacts to match coastal resources. So, military operations, regulated navigational areas for commerce, environmental sensitive areas, fisheries, and marine habitats.

While we've modeled 19 different scenarios, there are two scenarios or portfolios that I want to share with you today. The first one is the high electrification, and the second is the 100 percent renewable scenario.

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So, what do we mean when we talk about these two scenarios or portfolios some have called them? The economy-wide high electrification scenario assumes that we accelerate electrification of most transportation, buildings, and some industrial activities by 2050, West-wide. It also assumes that we use low and no carbon fuels for some remaining hard to decarbonize activities. Biomass, gas, and carbon capture, and direct air capture are all part of this portfolio, and some existing nuclear will remain.

The economy wide renewables-only scenario assumes we accelerate the electrification of transportation, buildings, and all industrial activities

by 2050. The portfolio is largely made up of hydro, geothermal, on and offshore wind, solar. And, both scenarios also include a significant amount of battery storage technologies.

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So, this is our study area. It is all 11 Western states comprising the Western Interconnect. The model will optimize resource sharing across all of those states with consideration for reliability, and affordability, and growth.

Next slide.

And, next slide.

So, before I share some of the modeling results, I just want to remind everyone that these are scenarios, they're not meant to be predictive. These datasets were developed in the hopes that communities would start thinking more comprehensively about this transition. We've remodeled a variety of pathways, and those variety, and the variety in them includes cost analysis, and decisions about tradeoffs that any scenario might provide around our community goals. So, we're hoping that this data inspires the larger conversation and gives more communities agency to advance their climate goals.

Next slide, please.

So offshore wind. There are several important factors that we considered with offshore wind technologies along the West Coast. Compared to the East Coast, where studies have found offshore wind will play a major role in our low carbon and electrical generation mix, the West Coast is a little bit different.

The West Coast has higher offshore wind costs due to greater ocean depths, longer transmission distances, and frankly the abundance of onshore wind resources that are available in the West. Understanding those transmission costs from coastal areas to load centers is evolving, and I think was thoroughly covered by the CalISO presentation. So, I'll just note that we know that demand for renewables is up across the West.

The Power of Place West study can confirm that there's enough suitable land and ocean area to meet our clean energy goals, infrastructure needs, and protect high quality working lands and natural areas. We believe we have 20 times the amount of suitable land we need for solar in the West, we have three times the amount of suitable land that we need for onshore wind, and we have 14 times the amount of suitable ocean area to meet our offshore wind needs.

Next slide, please.

So, in terms of total suitability, let's start

with the big picture. These are three maps that show the total potential for offshore wind under three different scenarios. We limited our study area by 50 nautical miles offshore. Moving from left to right, the first map shows all the offshore wind potential on the West Coast, with the exception of military operations, regulated navigational corridors, and marine sanctuary areas.

As you move to the map on the far right, we have excluded development of offshore wind on the most ecologically significant and clearly—— critically important for marine habitat areas. What these maps really demonstrate is that we can protect all of our critical marine assets and resources and still have 14 million acres of offshore wind development available. We believe we probably only need about a million acres to meet the needs of the Western Interconnect by 2050. That's less than 10 percent of the suitable area.

Next slide.

Under the high electrification scenario, the increased protection of natural and working lands has very little impact on the model selection of offshore wind. In this slide, you see that the demand for offshore wind, which is the very dark blue color, is fairly steady across the scenarios as we protect working

and natural lands and ocean areas in the far-right column.

The demand for wind in general decreases from left to right as we increase protections of natural and working lands. The model favors many other technologies to meet energy demand under greater protection scenarios. More solar, more batteries, more biomass, low and no carbon fuels with carbon capture, et cetera.

So, when we look at the next slide, and the maps of that, under the high electrification scenario, the maps moving from left to right, the turquoise areas are what are selected for offshore wind development. The last map, which is the highest protection level demonstrates that the distribution of offshore wind development is more diffuse, but actually about the same amount of generation across all three scenarios. It's usually about 15 to 16 gigawatts by 2050 off of the West Coast.

Next slide.

So, in the renewables only scenario, where we're focusing on wind development, there is a bump in total wind generation across the West. Offshore wind is less than 20 percent of that wind production. As we increase protection of natural and working lands, and we're in the highest protection level in column three,

the model doesn't select more offshore wind, it prefers solar and battery capacity closer to load centers, and total wind demand across the West is reduced.

And the next slide will have maps of that.

So, under the renewables-only scenario, we know that, that the renewable demand increases overall. Offshore wind demand increases similarly, as much as 26 gigawatts. The map for this from the right, further on the right shows those site selections. Whether we're talking about high electrification scenarios or renewable-only scenarios, we believe that the West only requires 1 million acres of offshore wind.

Next slide, please.

So, what does this mean for California? In the 19 scenarios that we ran, our capacity expansion model indicated the need for seven and up to 26 gigawatts to meet 2050 decarbonization targets across the West. California's contribution is probably between 10 and 20 gigawatts towards that goal. Our 2045 estimates are between six and eight, but if California's goal is to be carbon neutral by 2045, you might want to take into consideration our 2050 numbers.

And that's all I have to share today. Thank you.

MS. DEMESA: As Scott makes his way up to the

podium this is Rhetta deMesa with the Energy Commission. We have Jana Ganion online with us who's joined. Jana, do you want to turn on your camera and briefly introduce yourself?

MS. GANION: Hello, everyone. Can you hear me okay?

MS. DEMESA: We can.

MS. GANION: Okay, thank you, Rhetta. So yes, my name is Jana Ganion. I'm the Sustainability and Government Affairs Director for the Blue Lake Rancheria tribe up here in Northern California. And, I'm also a senior advisor to a new regional effort called the Redwood Region Climate and Community Resilience Hub. More on that later. Just very briefly, I want to say that offshore wind provides the first truly multifaceted deep supply chain economic ——

MS. DEMESA: Jana? Jana, apologies. I'm going to hop in here really quick for just a moment.

MS. GANION: Yeah.

MS. DEMESA: We're going to be holding comments until a little bit later.

MS. GANION: Oh, I'm so sorry. I apologize.

MS. DEMESA: Oh, no worry.

MS. GANION: Okay.

MS. DEMESA: No worries, and thanks for

joining us.

MS. GANION: Thanks, everybody.

MR. FLINT: We do appreciate your enthusiasm. Just hang on for a couple more minutes. And thank you, Nicole for your presentation.

So, now we're going to move on to begin our roundtable discussion. And let’s start with questions on the study presentations that you just heard. I want to thank all the presenters, and we're gonna start with allowing our study presenters to ask any questions they have of each other.

And so, to indicate you have a question, if you're in the room, please take your nametag and turn it up, and then I will call on you to ask your questions. If you're online, please use the raise hand function and we will get to you and we'll start in the room, if there are questions, and we'll start first with presenters questioning each o—— having, that might have questions for each other. Do we have any takers for that?

I think that I did have——I have a couple of quick questions.

MS. DEMESA: Before you hop in, Scott, this is Rhetta again, we do have a question from Nathan online.

MR. FLINT: Oh, great.

MR. BARCIC: Morning guys.

MS. DEMESA: You can go ahead and unmute yourself.

MR. BARCIC: Thanks, guys. Just a question for the Goldman folks, and I'm sorry if I missed it in the presentation. Just wondering if you could cover for a second the extent to which land use type constraints were applied in the analysis?

MR. PHADKE: Thanks for the question. So, I think the kind of constraints we applied were as follows. So, essentially, we used the NREL's ReEDS model's site selection, and on that there were several constraints related to marine protected areas, areas which are national sanctuaries, areas —— so, yeah. There are several exclusions related to that, but it doesn't cover all the potential exclusions.

MR. BARCIC: That's helpful. Thank you.

MS. ANDERSON: Can I, before we go further? This is Hillary, I'm working the slides in the back. Please make sure to state your name every time you start to talk for our court reporter who's online that can't see you in the room. That way we can have an accurate transcript. Thank you.

MR. PHADKE: Alright, and I think I just wanted to add that, this is Amol Phadke from Goldman School. And, whatever sites we have selected, we can

share the data. So, you can see what exclusions we were applying. So, all the underlying data can be shared.

MR. FLINT: Thank you. Are there more, are there any other hands raised?

MS. DEMESA: None online at the moment.

MS ANDERSON: And also, a reminder for our attendees, the hand-raise function, this is for our panelists and for our presenters for this afternoon. We'll have public comment at the end. So, when—— for online attendees that are raising their hand, we won't get to you until public comment. Thank you.

MR. FLINT: Well I do have —— so, Nathan asked my question, but I was gonna ask a similar question of the Nature Conservancy and Nicole. So, can you just say a little bit about what your exclusions that you might have used offshore? Or, and what kind of, what kind of habitats did you consider sensitive that you might have excluded from your —— the areas you examined?

MS. HILL: Thanks, Scott. This is Nicole Hill with the Nature Conservancy. Is —— do I have the ability to share the screen? Because I can actually, I mean, we are talking about dozens and dozens of map layers. Could I share screen and actually just kind of ——

MS. DEMESA: Yeah, you should be able to if

you want to go ahead and give that a try.

MS. HILL: Thank you. Now, I don't know how well you'll be able to see this, but let me get the presentation loaded.

Keeping in mind that we looked at the entirety of the West Coast. So, can you see the slide?

MS. DEMESA: Yes, this is Rhetta. We can see your slide.

MS. HILL: Okay. So, initially, in identifying suitable areas, we excluded what we call legally protected areas. So, state and federal marine areas, national marine sanctuaries, included in that is a lot of defense layers, a lot of layers related to commerce and transportation. So, that was kind of category one.

Category two, were areas that were administratively protected, but would have a higher level of review and greater risk for development potential. So, there are a whole bunch of exclusions associated with that. And then, category three were areas that were most significant ecologically, and have been identified by state agencies, federal agencies, and The Nature Conservancy.

So those were the three categories that we used. I'm happy to share this slide with the broader

group and enter it into the record.

MR. FLINT: Thank you, Nicole. Just one more quick follow up to that. So, a lot of those things seem to be more closer, encountered closer to the coastline. The —— is it same kind of areas you're finding, I think you said you were looking at 50, I'm sorry, I don't have my notes right in front of me, but you were looking at——

MS. HILL: 50 nautical miles off the coast.

MR. FLINT: Right. And so, were you in—— or did you have the same kind of data available for areas 50 nautical miles off from the coast? Or was it a different set, or a smaller set?

MS. HILL: I would say it's probably a smaller set. I mean, we had bathymetric data, which might be rock outcroppings, and ocean depths, that would indicate important fisheries and habitats. Yeah, I'd say that would be a smaller set.

MR. FLINT: Great, thank you. That answers my question.

I'll give folks one more chance. Any pres—— any of the presenters have questions after thinking about it a little bit? Anything online?

Okay, I'll open it up to the —— to the broader invited group here at the table, roundtable group. So,

does anybody have questions of our presenters about their presentations? And I see Michael had his hand up first. I'll start with him. And please remember to restate your name for the court reporter.

MR. GERACE: Michael Gerace, I'm from the Yurok tribe, I'm the Planning Director there. My particular interest is in the North Coast. And, I've had a question for some time now that I really appreciate the opportunity to ask now. Which is, that when we see the generation capacity that's being proposed at Morro Bay and Humboldt in relationship to, essentially, all of the studies that have been shown today, there's a large discrepancy. And, especially if we're talking about upping the gigawatt potential to something like Amol is suggesting, where, you know, where's that area going to come in?

And I see a lot of emphasis in these studies, also on the North Coast from the 2020 NREL, which showed an area of interest there in Del Norte, to even our last presenter. You know, it looks like people are pinpointing resources there along the, the North Coast that are not included in the current lease sale.

And, I wonder under what assumptions that's being made? Is there anything beyond just available resource why we've been, or some, have been narrowing

into those, that area? That's, that's one question.

And then the other is, maybe just a statement, or a question, I'm not sure until it comes out. But, if, in fact that is part of the plan —— and I haven't mentioned distribution yet —— but, both the area where, to be developed under this, this assumption, if I can just take that liberty and say that it's been an assumption to many of the scientists and others doing these studies, and also the distribution. You know, that's a disproportionate impact on the North Coast, and on the Yurok tribe in particular.

And so I wonder if those assumptions can be verified, or if, or if also, there's any way to request that that broader picture is included in AB 525 so that communities who may be impacted by future developments that aren't, as part of the current lease sale, can see that and, and make comments?

MR. FLINT: Did you have, we are —— Michael are you directing that question? I, I think I'm fair game since I presented earlier too. Are you directing that question to me, or, or one of the particular presenters?

MR. GERACE: I mean, anyone who's, who's made the suggestion that that would be the area to be developed. You know, whether by showing it on a map or, or otherwise.

MR. FLINT: Okay. I can start. I can start answering and then Walt, if you can think about it, and maybe you can help me out from your, the point of —— after I finish, the point —— from the point of your studies, what other things have you looked at that make those, that make that an area that is good for offshore wind?

So, I'll just start. And first I'll say that' the purpose of the AB 525 process, is to look at these areas and these issues around them. We're directed very specifically, to identify potential sea space to accommodate the goals that we're identifying. And we're just starting that work with the agencies, and we'll be reaching out and having, you know, workshops and reports specific to that sea space kind of work to share with folks, and receive comments, and discuss farther in the near future.

So, we're just starting that work from the AB 525 perspective. Secondly, we're clearly —— directed pretty clearly, by AB 525, to work, to continuously work with agencies and all the stakeholders and the tribes to examine these areas together, identify the concerns and issues, and look at what we can accommodate and how we can help to lessen and offset impacts. So, I think that what, just what we've seen in our —— from the perspective

of the reports that we looked at, the North Coast area of the state, and it also extends past the state line to Oregon, has the, some of the best wind resources in the world.

And the wind resource values there are much higher than they are off the South Central Coast. So, that's why some of those areas keep showing up in the studies. That's a critical factor for potential development. And, you know, wind also, better the wind —— it's not just the wind speed, it's the consistency of the wind, and the consistency and direction, and the time of day that it blows, and that's some of the things that we're talking about when we talk about the profile that folks are talking about in their studies.

And so, wind is very favorable. Where it's stronger, those things are better. And when —— and also, those things relate to how much energy you can get out of a particular area. Areas that are better from all those different factors can produce more energy in the same amount of space because of those factors.

And so that's why these areas keep showing up in studies. And, we have a lot of work to do in our AB 525 work to examine it closely, Michael. And so, we look to do that working with you in this process. Walt, did I get it a little bit right?

MR. MUSIAL: Thanks, Scott. No, you got it. You got it right, and I don't have a whole lot more to add to that other than I would say that these sites that we're looking at and talking about are, haven't been identified by the Bureau of Ocean Energy Management. They're just study sites. And that we don't want to get ahead of them but as Scott said —— the best wind resource is in the North Coast. It's yet to be determined if that's the least conflicted.

There will have to be more transmission built in order to carry the power down and those are, I think an idea that the, that there needs to be a critical mass of projects on the North Coast to make that investment. And as Scott said, this is being looked at in the context of not just Northern California, but also Southern Oregon.

So, those —— I think that's —— we're early in the process, and there seems to be a large amount of potential on the North Coast where some of these targets could possibly be met.

MR. FLINT: And Amol raised his hand to help, add his perspective from his position there.

MR. PHADKE: Yeah, I guess I wanted to respond to, you know, the, like —— other studies are very different in terms of their assessment, and why are they

different? I think that was one of your questions.

I would argue that the studies from purely a resource potential perspective are lining up pretty okay. You know, which exclusions you exactly consider, not consider, but we are talking about, you know, 200 gigawatts of technical potential of the 1,700 gigawatts of gross potential, according to NREL.

And, so, the studies appear to be lining up on the technical potential, based on current technology. And, we feel that studies could potentially line up on, okay, if you relax the depth constraint, how much additional potential becomes available if you increase the packing, accepting some additional loss.

Those are, you know, fairly straightforward calculations. I don't think there will be a huge discrepancy. I think —— however, I would say that this is where the interesting work could begin, is that we have a vast pool of resources to choose from to really take into account several of the exclusions that the studies are not able to take into account, like the social considerations.

So here, beginning with the-800 gigawatt future technology resource, I'm just making this number up right now. Finding 50 gigawatts out of that is a worthwhile endeavor.

MR. FLINT: Thank you, Amol. We have lots of tents up now in the room, and probably some online. I'll just —— I just want to also add, part of the AB 525 process, you know, the we want to look at areas that are outside of these areas. We —— as —— in some of the other studies, we want to look in deeper waters and examine some of the issues around that. A lot of these areas, you know, the farther from the shore, it affects the cost. And, there have been some assumptions that the easier it is to reach, from a technological perspective, the easier it is to develop. And so, it's closer to shore. But, we want to look at other areas outside of that. So, I will go to Commissioner Vaccaro.

COMMISSIONER VACCARO: So, you know what Scott, I want to give our invited participants the opportunity to ask the questions. I can save mine to the end, and then I know Vice Chair Gunda had a question, and he's a little newer to some of our workshops here. So, maybe I'll give the space there and either hold mine entirely or wait until the end.

MR. FLINT: So, we'll start with Kim, Kim Delfino.

MS. DELFINO: Thank you. Kim Delfino, since I'm supposed to let people know. I had, so, is it okay if I had —— I have a few questions, can I just —— should

I just ask one and I'll —— and, and, how do you want me to do this?

MR. FLINT: Two.

MS. DELFION: Okay. Thanks. Phew, I get two questions. Alright, so I'll give one question for the NREL presentation. On the cost study, I just wanted to know if they factored in mitigation costs when they were assuming costs? So that's one question.

MR. MUSIAL: Are —— you wanna —— I'll, I'll —— I mean, the answer is probably no, because the mitigation has to do with specific projects, and this wasn't ——the studies we did weren't directed at specific projects. They were scenarios.

MS. DELFINO: Okay, thanks, that's kind of what I thought.

MR. MUSIAL: So, if you're talking about environmental mitigation, I'd put this——

MS. DELFINO: Yeah, yeah. So, when you were assuming a certain cost of the energy, but that makes this, that's, but you're not factoring in what potential you would have to factor in in terms of mitigation costs for projects, which does impact overall costs.

MR. MUSIAL: Correct.

MR. FLINT: If ——

MS. DELFINO: Yeah, okay. Thank you.

MS. ANDERSON: And, this is Hilarie again, please remember to state your name before you start speaking. Thank you.

MS. DELFINO: Okay. So, this is Kim again, Delfino. My second question is for the Berkeley study. And my question on that is, so, I think the 50-gigawatt was not the least-cost scenario, and I'm wondering about what the cost analysis was for the 2025 gigawatt scenario? Because that seems a little more close to where the report was, just wondering about that. Thank you.

MR. PHADKE: Okay, so, essentially, the cost differentials between our 25-gigawatt scenario and our 50-gigawatt scenario are pretty minor. And again, we will be happy to share all the total system cost results. I would argue that the —— our assessment, for a purpose we were very conservative. Like, we took the mid- technology cost scenario from NREL. We didn't consider the future cost reduction because you would deploy it at scale, so there is —— we have seen empirically again and again, if you say go from 10 gigawatts deployment to 50, the cost won't stay the same. The costs decline.

So, we have, kind of, you know, I have done

several such modeling studies, and we are kind of increasingly moving away from, kind of, claiming that this is the least cost, because the costs are so uncertain. So, what we are kind of assessing is that, are the costs comparable to either current costs, or counterfactual costs? Within say plus or minus five, ten percent.

And what we are finding, is that without even taking into account these potential future cost reductions due to scale, the costs are comparable between 25 gigawatts and 50 gigawatts. And 25 gigawatts is a great start, but it doesn't do enough, I think, to add to resource diversity. Especially given the unaccounted extra demand for power, for green hydrogen and several other things we need to do.

MS. DELFINO: Thank you. So, you're saying that, basically they're the same, but you're not saying it's least because it's hard to predict what the costs are?

MR. FLINT: Molly, Molly Croll, in the room? We're a little behind on time, but we'll keep going. We have Molly here, and we have one person online. Yeah.

MS. CROLL: Thank you, Molly Croll.

(OFF MIC)

Thank you, Molly Croll. My question is for

Nicole. I'm just interested in your findings that show we have, you know, 14x or 20x suitable space for renewable buildout in the west, which implies we have a huge amount of flexibility. And obviously, even great projects, well-sited projects can't always get built, so that flexibility is very important. But, I'm wondering if you applied a transmission availability and suitable development filter to your analysis? Because obviously, we can't reach the best resources in Wyoming, Idaho, wherever else, we can't. They do no good for us. And, as we also know, siting and getting approval for transmission lines that cross multiple states is very difficult, and why we haven't seen a lot of those succeed all the way through toward actual, you know, construction and development in the last couple of decades. Thanks.

MS. HILL: Thanks for your question. This is Nicole Hill with The Nature Conservancy. We did include transmission availability across several scenarios, but not to all of the —— so the transmission modeling that we did under the 19 different scenarios looks a little bit different, which gives us a range of opportunities. But, the 20-fold figures that I offered were, broadly the availability of lands. And, as part of the final report in August, we're happy to share all of that

transmission data and those scenarios so that folks can get a closer look at them.

MS. CROLL: Thank you.

MR. FLINT: So next (INDISCERNIBLE) room.

COMMISSIONER GUNDA: I just want to begin by thanking the presenters, that was really helpful information. And, as Commissioner Vaccaro mentioned, I'm coming into this kind of relatively new. I missed the last offshore wind workshop, which was really sad.

So, let me go into to a couple of questions that, maybe just one question that goes into, generally the, the kind of spirit of conversation here. So, I'm thinking through the different studies and the variations, and you know, maybe we can start with TNC. Have you looked at, when we talk about the, the potential of the picking up different resource diversity —— is your study including also production cost modeling or it stops at capacity expansion?

MS. HILL: We do have production costs technologies, and cost estimates for things. Most of it's related to existing reports that NREL have done or others. I just didn't share all of that data yet. And, I was concerned about having time to do it all. I thought the particular value we added today was to the environmental exclusion layers, because I don't think a

lot of folks have looked closely at that. But, all of that would be part of the study. And, we can share those details on offshore wind specifically, if I can pull them together after the meeting.

COMMISSIONER GUNDA: Thank you so——

MS. HILL: I can't speak to them today, I don't have them off the top of my head.

COMMISSIONER GUNDA: Thank you, Nicole. Now I'm just kind of thinking through, just how to organize this diverse information that's coming at us. I think different studies included different kind of constraints, and not necessarily all of them. So, including, you know, what Amol kind of talked about, or Priya talked about, we had different constraints being applied for different ones.

So, it'd be nice to, you know, maybe Scott, to you organizing the information in terms of what kind of constraints were used. You know, whether land based or offshore, like transmission constraints, land constraints, but also just generally, the constraints around cost. So, I think that would really help align, you know, this conversation a little bit more.

And then the second part, I just in a, a question to I think Priya to you. You know, just at a high level, the conversation around the reduction of

gas, and the diversity, right? So, if we want to retire more gas resources, we need more diversity. So, could you speak to that a little bit more in terms of how you see, especially given the current scoping plan conversation on potentially getting to a 2035 carbon neutrality, but also higher levels of electrification that we're anticipating, so just wanted to see how far you guys went?

MS. SREEDHARAN: Thank you for the question. Priya Sreedharan, with GridLab. And, maybe Commissioner Gunda, let me just make sure I'm understanding the question. I think you're asking about the, specifically around what we learned when we looked at different —— when we looked at the retirement of a portion of the, the in-state gas capacity? Okay, great.

Yeah, so, actually, we, what we found was when we retired about a third of the in-state gas capacity under one of our sensitivities, our stress conditions, we found that all three of the portfolios were effectively able to serve load, keep the lights on. It, you know, from that, we didn't push that analysis further and say —— well, wait, what if we retire more gas? Would it, you know, can we go all the way out to eliminating? That wasn't really the focus.

But, one thing that we did identify with the

quantity of gas we retired, which ended up being about 11.5 gigawatts, which was connected to the utilization factors of those particular units. It did line up reasonably closely with a Cal-Environmental score, 76th percentile, which was about 12.7 gigawatts. But, we're very careful to note in our study that for the purposes of —— so while we could identify as sort of a rough quantity of gas that could potentially be retired, and still be able to maintain a reliable system from a resource adequacy perspective, we didn't conduct specific local transmission analysis to understand how to optimize on specific gas units. So, our recommendation is that would be a follow-on kind of analysis that should be done.

MR. FLINT: So, we will take one more question. There's been somebody waiting patiently online. We'll take that question and then we're going to take a break because I, I need one.

(Laughter)

MS. DEMESA: This is Rhetta with the Energy Commission. We have Mark Gold online with his hand raised. Mark?

MR. GOLD: Hi, this is Mark Gold. Thank you. I, first of all, thanks, Commissioner Gunda, because I think you kind of dealt with a lot of what I'm saying on

the constraints part of it. Because, you know, for those of us who are dealing with the sea space side of the equation, and really trying to figure out where you can and cannot put a floating offshore wind, and just a reminder to the audience, there's all 14 of these facilities in the entire world. That, that's individual turbines. So, we don't really have a lot of experience in which to go on even though we're all pretty excited about going into this brave new world.

And so, in light of that, I couldn't —— I, I have to support that really strongly, is to bring up all of these various different constraints and just to put that list, Scott, you know, who you —— also who used what sort of cost analyses that are port costs, since we don't have, really, any port facilities at all in which to do this. And I think that's important.

And it was, it was good to see, Nicole, that, that you took into consideration the national marine sanctuaries, I think also the proposed one as well, for the Chumash heritage site. And, Department of Defense constraints to the South, that, that pretty much makes up 75 percent of the coast of California that's largely off limits as a constraint, assuming national marine sanctuaries and DOD stay in place there.

And so, a couple of questions here, just to

sort of follow that up. Is Nicole, and I think you sort of got to this a little bit, but how did the levels of biological and fisheries protection that you provided, you gave, sort of, this I think there's three tiers maybe was four tiers. How did that result in what the wind generation estimates were, depending on what levels you used? So that was, that was one question that I'd like to see answered.

And the other one is just sort of thinking about timelines, like, you know, 2030 coming up with numbers that um, and this is for the group as a whole — is that do people consider what's actually feasible to do within that timeframe? I mean, and I bring that up because if it's larger than 4.6 gigawatts, which is the maximum capacity at those two sites, that now, you know, are ready to be added to lease sales. You'd have to add, like, new sites, which would obviously take a significant amount of time. So, those were two of the questions that I had.

A third, and I'll stop there, I promise, at what depth limit? So, this would be for Scott, so people don't need to answer this one. Is, what depth limit was the constraints that were used? So, just stick with the two, the one for Nicole and the one on, on sort of looking at regulatory approval, and

transmission, and port creation timelines, and assuming what the estimates could be. Those are the two. Thank you.

MS. HILL: Thanks, Mark. So, in our modeling we use these environmental exclusions, we basically had three what we call siting levels. And, with each scenario, the model could choose a technology based on its cost, its reliability, and also based on whether or not it's outside of an exclusion area.

So, we constrained it geographically, we —— then we constrained it by technology, and then we constrained it also by cost. So, that's how the model essentially basically works. We used RIO as our capacity expansion model, which is the Evolve Energy Research, Ryan Jones project. And, you saw all the list of exclusions that we had available to us.

MR. GOLD: Yeah, Nicole, Nicole, I'm sorry. This is Mark Gold again, sorry. You know that.

MS. HILL: That’s okay.

MR. COLEMAN: But, for the court reporter. But, the essence of the question is, is based on those various different thresholds, how did the wind generation estimates change? You know, because obviously, some have much, you know, much more area that's, that's constrained than others, and so did, you

know, did that reduce it from 20 gigawatts to 10? Or like, what happened there when you, when you ran those different approaches?

MS. HILL: Under the high electrification scenario, it really kind of stayed a similar 15 to 16 gigawatt size, but it shifted it around to different areas. So, as it got more restrictive, you needed more space and lower quality wind areas to produce the wind demand.

In the renewables only scenario, you see a bump in wind in general. But, by the time you get to the most restrictive siting levels, where you're doing the greatest amount of protection for ecological features, and working lands in the West, you see a much bigger shift to solar, and solar near service centers.

MR. GOLD: Okay, all right. So, at the end of the day, in the new report —— Mark Gold again. In your report, will it be able to literally give us a gigawatt number for the various different levels of biological protection that we're considering in the model? That was the part I didn't see. I didn't see a slide on that, I'm sure it's in the report. But, that was sort of what I was wondering.

MS. HILL: I think I was having —— this is Nicole with The Nature Conservancy. I think I was

hoping to —— in our last slide, where we give a range of values and gigawatts for the West Coast and for California —— I could share that last slide if that's helpful?

MR. GOLD: Yeah, I thought I saw everything.

MS. HILL: We actually have a set of gigawatts for consideration. Let's see.

MR. GOLD: Yeah, no. I saw the 26's and the 15's, and I'm just wondering from the standpoint of, if you have 75 percent of the coast that's largely constrained, how do you get to 26, you know? And, and did, did that even affect the number? Or is it just more, that's what you need to, sort of, balance the scales on energy demand, as opposed to that's what you can actually produce through—— even with those constraints?

MS. HILL: You can produce a lot more. What this was, was a scenario where, if you choose to go renewables only across the West, you would need up to 26 gigawatts of offshore wind in this scenario, in that portfolio. So ——

MR. GOLD: 100 percent renewable?

MS. HILL: 100 percent renewables.

MR. GOLD: Okay. Alright, so I'll ——

MS. HILL: But that doesn't even begin to touch the number of —— the amount of suitable area or the capacity on the West Coast. It's roughly 20 percent of capacity.

MR. GOLD: Okay, yeah. All right. Thank you. I was, obviously focusing just on California, not, not the Oregon and Washington situation as well. All right, well, I'm out of time. I guess I'll skip the follow up on the other. But I, I was just curious how people —— I, I just couldn’t tell from the presentations, and this really applies to everybody, on whether or not, you know, especially the near-term constraints, were really —— on time, were considered. You know? On what would actually have to be done from the standpoint of infrastructure creation, both on transmission, two brand new ports, and, and regulatory, just to meet some higher targets. So, it just wasn't clear to me whether that was considered or not, or whether this was more of a energy generation exercise. So, I'll stop there. Thank you.

MR. FLINT: And we, we have your question, and we'll work to make that clear. We can do the, the studies as we're going through things tabled together about the assumptions in the studies, they, we, they also talked about. Those are also assumptions they talk

about, so we could put that in the list to help clarify.

MR. GOLD: Thanks, Scott.

MR. FLINT: So, with that —— yup, you're welcome. So, with that, we're —— you guys didn't get too out of control on me. We're a little bit behind time, but we do need to take a ten-minute break. So, please come back at 10 after 12. We'll resume with the second part of our workshop and roundtable. Thanks. Great thanks to all presenters, great presentations, tons of information this morning and we'll work to make it more clear going forward.

(OFF THE RECORD 11:58 A.M.)

(BACK FROM BREAK AT 12:11 P.M.)

MR. FLINT: Alright, guys, it's 10 after plus two minutes, like, I let you have an extra two minutes. So, please take your seats and we'll start the next part of the roundtable

So just thinking a little bit more about the morning. I think we're right where we need to be on discussing this information together. There's a lot going on in the offshore wind space. And the issues are complicated and interrelated. And so, I think we're starting to unpack those and that's why we're doing the work under AB 525. So, I think we're right where we need

to be.

So, in the afternoon session, a reminder first, everyone, please restate your name when you start to speak for the court reporter, and that means me too, because I keep forgetting to do that, so that we can get the record and the transcript accurate. So, thank you for that.

So, here, in this part, we are going to have our invited stakeholders take five minutes. We're going to go around the table, in the room and then online for folks who are joining us virtually. And we'd like to give you each five minutes to discuss your —— hang on a second here, let me get this right.

We are——

Well, we want folks —— we want folks to give their perspective on planning for offshore wind under AB 525, and how we should further consider the factors, the 12 factors that we've been discussing, when developing the offshore wind megawatt planning goals, and from your perspective in listening to the studies, what other things should we be looking at that either are, more closely, that either are addressed in the studies, or what things we should be looking at that aren't being addressed by the studies.

And so, we'll do that. We'll start in the

room, and I will go —— this time I'll go right around the table here. So, that means, I think, that Steve Chung would, will be our first presenter.

MR. CHUNG: Hi, I thought Scotty was just picking on me here. Alright. So again, Steve Chung, Department of Defense, you know, our thanks and my personal thanks on behalf of DOD for inviting us here to table.

Our perspective, in short, and I'll keep this very brief, is that the draft report, and the essence of what was tasked in AB 525 —— we've reviewed, and we saw a lot of the synergy. Specifically, with some of the 12 points that Scott Flint was just referencing here, in capturing many of those salient points. Most importantly, from a DOD perspective, we greatly appreciated an acknowledgement and incorporating national defense into the mix of consideration.

That being said, the content in its form in the draft, our perspective was that it maintained great alignment and consistency in the journey that we have been on, some, longer than others. From a Department of Defense perspective, and our state colleagues, our industry colleagues, our state agency colleagues, it goes back about 10 years.

And, just to keep things in perspective, and I

will bring it back and associate it with AB 525, and the foundation that AB 525 was laying here. That follows about eight years of concerted effort by industry, by local, state, and federal agencies to work, collaborate, coordinate on finding mechanisms and ways to address some of these climate challenges that we are facing, both locally, nationally, and globally.

With California, as some of you that have been involved with offshore wind for many years, it's been a journey to find and establish an area, as noted by a few individuals. The Department of Defense conducts extremely critical military operations along the coast of California, along the entire US coast, East Coast to West Coast.

But looking at California and the complexities of our operations, Southern California, Central California. These operations, just to provide some context for colleagues here today, and colleagues on the phone that may not be aware. It is one of the most pivotal and critical operational areas that DOD has. Specifically, on, and I won't go through the litany list, but many of the things and issues that we hear of, whether it's the President asking or ordering, some of our battle groups and carrier groups out into theater.

I'd leave you with this, just one sound bite,

if there is a takeaway on that, you know, that Steve Chung made a comment. That I'd like you to take this comment away from a DOD perspective of the criticality of the operation, and the training and testing that occurs in Central Coast California.

That is an area where key training and certification is conducted. Specifically, but not solely, our carrier group exercises before they are deployed into theater. What does that mean? If those training and certification does not take place for our carrier groups in Central Coast California offshore, it would be extremely problematic to deploy those forces into theater.

I leave that point and I'm going to close this here real quick because I got the flashcard. Another key point of AB 525. We do see that this is a continuation of the journey of our collaboration, of our coordination with the state, other federal agencies, local agencies. We do not see it as the end all, I do not think the content of AB 525 stated that was the end all, but it is framing the journey that we will continue doing to try and to find compatible solutions for offshore wind for California. Thank you.

MR. FLINT: Thanks. Thanks, Steve. I just quickly, since I couldn't find this earlier, I just want

to reiterate. We're asking folks to share their perspectives on planning for offshore wind energy, including establishing megawatt planning goals in light of the 12 factors in AB 525, and observations of what is, and what is not, accounted for in the energy system modeling studies that we used, and the new ones that we discussed today. So that's our goal. And I was picking on you, Steve.

So, we'll go on to our next —— to Michael Gerace from the Yurok tribe, and please state your name for the record.

MR. GERACE: Michael Gerace, Yurok tribe. I'm from Alaska, where all communities are being devastated by climate change. And, I see the incredible impacts that communities in California are facing as well. We have to energy—— you know, in Alaska, whole communities, very little investment. And that's very concerning to me. So, it's very exciting for me to be in California where there's all this expertise, all of these resources, the wherewithal and the commitment to an energy transition. It's, it's really heartwarming.

And it's clear that California's —— has the opportunity to be a leader, or the global leader, in an energy transition that incorporates offshore wind. But, I think California is also best positioned to

incorporate ideas of energy justice into its transition. We know that climate change has not only devastated ——is devastating, you know, most of, well, maybe not most of the world yet, but you know, we're all seeing its impacts.

But, it's also revealed long histories of disproportionate investment and marginalization. And, we, I think, as a state looking to transition, need to recognize that. And for AB 525 in its policy and permitting recommendations, to recognize that the individual concerns of, and histories of communities potentially impacted by these developments should be incorporated very early.

And, the Yurok tribe has been ushering in the biggest dam removal project in the history of the United States, the Klamath River dam removal project. Very little benefits seen by the tribe for those, out of those developments. Some of which were developed, were, were producing energy, and yet the Klamath River was very close to decimated because of those dams.

And, in the upriver area of the, of the Yurok tribe’s reservation, over 40 percent of the households do not have power. And so, if we were looking to make these developments, we need to recognize those histories. And I think it's up to California to

prioritize that, and we can do both, you know. To rush headlong in a to—— into a transition that's just purely financially and technologically motivated, risks repeating the same mistakes. And, I don't think that California and the CEC have that intent, and I, and I hope that it gets prioritized moving forward.

MR. FLINT: Thank you, Michael. Next, we move to Jacqueline Moore, from the Pacific Merchant Shipping Association. Please, state your name for the record, and affiliation, and you have five minutes.

MS. MOORE: Thank you, Mr. Flint. Again, my name is Jacqueline Moore, I'm with PMSA, a nonprofit Trade Association. We represent vessel carriers and terminal operators along the West Coast. So, not just California.

First of all, thank you for having the industry here, and in person, no doubt. We do hope to be seen as a partner and a resource going forward. So, thank you very much.

I do want to start off by saying the commercial shipping industry is not opposed to wind energy in practice, as regulations stipulate that the ships must plug in, all the equipment must plug in and everything else. We as an industry desperately crave reliant, resilient, safe energy.

We recently did an energy study where it showed that Californian ports, by around 2040, will need over 600 megawatts per year. And that's an incredible amount of power. So, we certainly want clean energy.

Let's see my notes are a little bit haphazard as I kept taking notes throughout the presentations. Let's see what I have here. So, in terms of the proposed goals, 2030 is really right around the corner. And given the timelines of projects, it's probably unfortunately, not feasible to expect massive deployment, at least in the near-term.

We can always raise the bar. It can certainly be dynamic, as most goals usually are. But, we're not going to want to ever lower it. The state should set realistic and feasible goals that are still respectful of all the stakeholders, not just maritime, but tribal, fisheries, and, and everyone else. Especially as Walt said earlier, the re-modeling due to the bias could also lower that technical capacity.

And that forecasted technical capacity is just that, it's not true feasibility. It doesn't take into consideration some of the many aspects that some of us here have touched on. And of course, other uses of the area, and considering that the maritime community has some unique legal aspects that we should also keep in

mind, though I won't go to into too much detail on that, as we could be here all day.

Let's touch on AB 525 real quick, the bill itself. One of the factors, I believe it's five, is a bit of a conundrum, as we are the only stake—— stakeholder here that are not included in the bill. To us, that is a glaring absence and a lost opportunity, I'll say. And of course, no fault of CEC, you did not personally write the bill, so it —— no fault there.

The language farther down in the legislative text does say, "other ocean users," so I assume we are wrapped into that. I think we are a major waterway user. But, I am okay with saying, "other," as long as we are at the table, and here I am today. Oh, again very appreciative.

AB 525 also says to prioritize least conflict ocean areas. And, this must always be at the forefront of all our minds. And, the Nature Conservancy's report and presentation, it was called Power of Place. And I think that it's a very impactful title, as placement is going to be incredibly vital to securing these goals, especially for the offshore projects.

As we look at additional Call Areas along the coast, let's consider that others have used this ocean space for literally hundreds of years. Some of the

areas of interest identified in NREL report, Mr. Phadke —— excuse me if I'm not pronouncing that correctly —— the Nature Conservancy's reports. Some of these areas may very well overlap with the new lead to be created for this new vessel lanes. But —— thank you, I'll speed up. The Coast Guard is undertaking through their path PARS process, and really initiated because of these Morro Bay and Humboldt projects.

They may overlap with the lanes shifting eastward or westward depending on vessel type, but most will go westward. So, let's continue to discuss this perhaps in future workshops, really digging into further areas if we do wish to look at that. We need to go about this thoughtfully, and I do appreciate how coordination with DOD was conducted.

I would like to touch on that some developers have already reached out, and I was very appreciative and pleasantly surprised. So, thank you again, and I look at some of us here in the audience. So, thank you. I will conclude if my time comes to an end.

I suggest to keep with the proposed goals as-is, they are impressive. They are laudable already, while being achievable. And, I want to make sure any goal that the state sets truly is achievable. With understanding that we can always raise them and review

them at specific intervals as we go forward throughout the years. We can all come back, reconvene together, and make sure we're working in a bold manner going forward.

So, let's continue to work forward and make sure that the projects will be deployed that we can all be proud of, and will work for our businesses. And Mr. Chung earlier called it journey, and it certainly is that, and I look forward to working with all of you.

MR. FLINT: Thank you, Jacqueline. Next, Molly Croll, from Avangrid Renewables.

MS. CROLL: Hello everyone, Molly Croll. I'm a policy regulatory and markets manager at Avangrid Renewables. And again, I'm speaking as a representative of the offshore industry, and invite my peers to contribute any additional points during the Q&A.

The offshore wind industry today is advocating that the CEC adopt planning goals of five gigawatts by 2030, and 20 gigawatts by 2045. This is a time to be ambitious, to go big on this clean energy resource, and importantly, to get ahead of the next crisis.

You know that the next two decades for the electric system will face myriad challenges, including direct effects from climate change on reliability, supply chain challenges, gas price spikes, constrained

capacity across the West, and increasing electrical loads. Ambition on offshore wind is actually an opportunity for the state to get ahead of cyclical emergency-centered planning, toward pursuing sustainable well-functioning, electric system for the long term.

In setting the goals, I would urge the commission to focus primarily about climate change, mitigation and grid reliability. So, the CPUC's IRP report on effective load carrying capacity, which recently came out, showed offshore wind in the range of 50 percent, which is very high for renewable resources. As we know, and as Dr. Phadke has pointed out, the time-of-day profile for offshore wind, I think you called it beautiful. Peaking in the summer, peaking at the —— during net peak at the end of the day, that's going to be critical.

And importantly, offshore wind contributes to grid diversity and resilience, which is something that we won't get in our grid unless the state takes initiative and actually plans for it. There's no question that we need this resource as part of an optimal clean electric system.

So, lots of change over the last four years since the offshore wind industry started rallying around about 10 gigawatt by 2040 goal. Around the globe we're

seeing ambitions rising, including, most recently the four EU countries that set a goal of 65 gigawatts of offshore wind by 2030, and 150 by 2050.

Another change, is what we know and can say about technology, and Walt pointed this out, that the industry standard now is looking more like five megawatts per kilometer squared, which is a significant increase. That's based on assumptions about turbine sizing as well as spacing. That means that the 5-gigawatt goal that I'm proposing can fit easily within the existing wind energy lease areas. We're not proposing to expand on that to achieve the 2030 goal.

And then importantly, we have another 15 years to do good site assessments and planning, considering all ocean users to achieve the 2045 goal. All of us here know and agree that climate change crisis demands decarbonization. We know SB 100 is calling for on the order of 145 gigawatts by 2045. And that's probably an underestimation when we consider electrification and renewable hydrogen and those sorts of things.

We also know that we can't expect California to get all of the best resources in the West for itself, when the West needs about 350 gigawatts total to decarbonize. My company has direct experience with building projects on land in California and it's not

easy. The easy to build places have been developed.

So, you know, I think we need to be thinking both beyond our borders and into the ocean. All things considered, I would say offshore wind is relatively low-impact. And in fact, it takes the pressure off the challenge of achieving our conservation, and climate, and defense, and land and ocean use goals by providing diversity in the footprint that we can build on. It also, also offers an opportunity to get community benefits and energy justice right, by planning now for what we want to achieve together.

The state does not need to apply caution in its offshore wind ambitions. It needs to go big to realize the full benefits, and the economies of building offshore wind at scale, while trusting our own processes and programs for ensuring proper protections and allocations of benefits. California will never have more —— build more offshore wind than we plan for. Engineers and developers from our —— from industry, do stand behind the goals that we propose as feasible, but there's penalty for falling a bit short. Conversely, if we aim too low, the cost will be very high in terms of the scale and relative costs of what we're trying to achieve.

So again, this is an opportunity for the state

to become a global leader in floating offshore wind. If we're overly cautious, we'll miss out to other nations around the Pacific and elsewhere that are poised to overtake us and reap the economic development benefits for themselves.

If we're ambitious enough, and commit to mitigating impacts, and maximizing local benefits, as I know we will, the Commission can develop —— can deliver an enormous and lasting win for the state and climate in adopting these goals. If we don't aspire and plan to go big on offshore wind, there's no way to win, but with ambition, we can rise to the challenge. Thank you very much.

MR. FLINT: Thank you, Molly. Next at the table is Kim Delfino. And we do have three folks with us virtually, so after Kim, Rhetta, will you walk us through those folks? Kim, please state your name and affiliation for the record, and you have five minutes.

MS. DELFINO: Thank you, Scott. So, my name is Kim Delfino. And I'm here representing the views of several conservation organizations, as I previously noted. Defenders of Wildlife, Audubon California, NRDC, Environmental Defense Center, Center for Biological Diversity, and a number of other organizations that worked very hard with the state and industry to craft AB

525.

These organizations strongly support offshore wind. They've been very involved in the offshore wind planning process, and we do believe that's an important resource for California. And, we want to thank the Energy Commission and its staff for the work on the draft report, and for the planning goals that were set of 3 gigawatts by 2030 and 10 to 15 gigawatts by 2045.

I would note that AB 525 specifically tasked the CEC to evaluate and quantify the maximum feasible capacity of offshore wind to achieve reliability, rate payer, employment, and decarbonization benefits, and establish the goals for 2030 and 2045, at the beginning of June. Which, I want to note, is we have deadlines set in 525. And, the Energy Commission does have a significant set of tasks on its plate. So, I'll come back to that point.

AB 525 has a legislative finding that offshore wind should be developed in a manner that protects coastal and marine ecosystems, and that the state should use its authority under state programs to ensure avoidance, minimization, and mitigation of significant adverse impacts and monitoring and adaptive management of offshore wind. We believe that the Energy Commission's proposed planning goals make sense, and

should not be increased at this time.

First, we believe that the goals are feasible, and higher goals would not be feasible given the timeframe. The word feasible is critical here. I think it's important to point out that the legislation did not use the word possible. It didn't insert the word technically feasible in front of the word in the bill. Feasible is meant to be used in its broadest form, and it is used for a reason. It is used because it conveys the need to ensure that something is reasonable, and takes into account the foreseeable and likely circumstances that could limit or constrain what's being asked.

The CEC staff correctly and reasonably looked at its own regulations to define what feasible means. In this case, feasible is something that's capable of being accomplished in a successful manner within a reasonable period of time, taking into account various factors. In this case, the factors that influence what's feasible are mirrored in 525 itself, as part of the 12 planning criteria. That importantly includes impacts on coastal resources, fisheries, Native American and Indigenous peoples, national defense, and strategies for addressing those impacts.

Second, to come up with a goal that does not

include the important constraints that are out there in our ocean, would be essentially reading those criteria right out of AB 525. The ocean may seem like a vast and open space, but in fact as you can see here by the comments by, by the various stakeholders, it is indeed actually congested and a very heavily used, with lots of uses and lots of values.

Similar to the problem we faced when working through how to plan in the California desert. People looked across the desert and saw vast open space, thought you could put so—— energy anywhere, and it turned out that's not indeed the case. Good planning is absolutely critical to get energy online quickly.

So, those who've urged goals to be increased through the studies conducted by, say, what we've heard here today, NREL and Berkeley —— those studies did not factor in environmental or social factors, representing by all the folks sitting here this panel. And to set a planning goal that reads these factors out of the goal, is not setting a feasible goal, and would not be —— and would only be looking to one set of criteria. What is doable from a purely technical sense?

As for environmental concerns, we should be looking at entanglement of marine mammals, sea turtles, sharks, diving birds, vessel strikes of whales and sea

turtles, disturbance to benthic habitat, birds and bat collisions, invasive species problems in ports as well as cumulative impacts. The Nature Conservancy study did try to take some of that into account, and I think in that case, provides you with a more accurate sense of where —— what feasible might actually look like.

The CEC's proposed goals are also consistent with the goals set forth in the IEPR, the TPP, and the SB, or the IRP and the SB 100 plan, as noted by the presentations today. And these other planning processes will give us an opportunity to further reevaluate these planning goals in those settings, with those types of constraints.

Also, the CEC's goals reflect reality, in terms of what is out there on the ground, and what's available in the next seven years. I would just simply note, one of the assumptions that is being made on Morro Bay, is the ability of transmission assuming the retirement of Diablo. I don't necessarily think that's going to happen. And if that doesn't happen, what does that mean for transmission? And that does have an impact in your numbers.

So, three megawatt or three gigawatts is, I think, a reasonable goal set for the next seven years. That is not a lot of time. And, I think someone made

the point that we've only —— I think was Mark Gold —— only have 14 of these types of developments out across the world. So, we don't have a lot of information in terms of how this will happen here in California.

So, finally, given that my time is up, I would just say that the goals here, at this point, changing the goals would slow down the CEC's efforts, and delay what's already happening here with —— in terms of your planning. We don't think that's very smart. We think that you guys need to move forward quickly. Changing up the goals is going to slow everything down, and you're not going to meet your deadlines, and it's not going to serve our purposes here to meet a goal to get wind resources online in the next seven and, what, six and a half years.

So, we appreciate again the CEC's efforts here. We look forward to continuing to work collaboratively with everyone, and thank you for the opportunity to present these comments.

MR. FLINT: Thank you, Kim. Okay, Rhetta, if you can take us through the roundtable participants online, please.

MS. DEMESA: Of course. This is Rhetta with the Energy Commission. We're going to go ahead and invite Mike Conroy, if you wanted to turn on your

camera.

MR. CONROY: Yeah, confirm you can hear me.

MS. DEMESA: We can.

MR. CONROY: Perfect. Yeah, at the outset I want to thank you for inviting me to be on the panel here today. My name is Mike Conroy, I'm the Executive Director of the Pacific Coast Federation of Fishermen's Associations. We represent and work with fishing associations from all of the ports and harbors in California and to the north. I am also the co-chair of the Pacific Fishery Management Council's ad hoc Green Planning Committee, which was convened to address offshore developments in the EEZ, like offshore wind and aquaculture.

I want to start by giving my appreciation for the presentations that preceded our panel. While they explained what the goals could be, they do not answer the question as to what the goals should be. We firmly believe the answer to that question is that you should not increase the planning goals beyond those identified in the draft because they are infeasible when looking at the bigger picture, as Kim outlined right before me.

The fishing industry has repeatedly stated that we are not against offshore winds, and I will stand by that statement today. What we are against, is being

told where offshore wind will be located, rather be —— then being asked where it could be located, such that impacts to our operations and the state's food security are avoided, and for those which can't be avoided, they are minimized.

This has not happened despite repeated pleas to BOEM to involve us in the conversations. We were asked for our thoughts and observations in the studies which were presented. I searched for fish or fisheries in each of the studies made available. I think I received a total of four instances where those appeared, and one was identifying the Department of Fish and Wildlife as being a member of the task force.

With regard to the cost of floating wind by 2019 and 2032, we are disappointed that there was no participation by NMFS or any other agency or fishing industry representatives. Fishing is mentioned only once when talking about activities that California’s ports support.

It is short sighted not to include the cost to California, California’s seafood consumers, and California's recreational fishing industry from the loss of fishing activity to the state. Another study referenced excluding areas nearer to shore because of high levels of fishing activity, but that only shows a

lack of understanding of how fisheries operate. While it may be true, there's more fishing activity closer to shore, fisheries for highly migratory species only take place offshore.

Offshore wind is being sold as climate friendly, in terms of carbon emissions from electricity. But, does this actually hold up when compared to other forms of electricity generation? There's a 2017 study that compared German electricity and found it to be ten times dirtier than France's. Germany relied heavily on wind and solar.

In terms of fisheries, it's beyond dispute that the carbon footprint of our fisheries is much less than seafood produced by foreign sources and imported into the US. And, according to a recent study, most domestic sources of protein —— beef, poultry, and pork. Given the health benefits of seafood consumption, it is unlikely that demand for wild captured seafood will dissipate. By removing productive fishing grounds and reducing the ability of our harvesters to meet that demand, we will necessarily be increasing our reliance on import, thus increasing the climate cost of seafood consumption in California.

We were also asked for our perspective on Factor 12 from the draft report. Fisheries will be

impacted no doubt. For the sake of clarity, I don't view fisheries as just as the vessels which recreationally fish, or harvest the public trust resources for the benefit of California and the nation. Fisheries necessarily includes the buyers and processors, the bait providers, the fuel docks, the marine mechanics, the restaurants who purchase our products, and the Californians who recreate by fishing, and the Californians who prefer sustainable and responsibly sourced seafood. Collectively, this is what is meant by a fishing community, and all of these will be impacted.

As I mentioned, had the fishing community —— fishing industry, and community, and other ocean users been at the table when siting discussions were undertaken, then maybe we wouldn't occupy such a prominent role on the menu.

In terms of waterfront facilities and port infrastructure, our coastline doesn't have an abundance of ports and harbors with large inlets needed for manufacturing, construction, and maintenance of wind turbines, and will either require towing them hundreds of miles, or billions of dollars of infrastructure costs, which includes taking away more of our coastline with lengthy man-made jetties.

Seems that each day another study is coming out which talks about wind wakes and the impacts to upwelling and other ecological functions.

MS. DEMESA: One minute remaining.

MR. CONROY: Upwelling is the primary driver of productivity in the California current larger marine ecosystem. Impacts to marine mammals and other protected species, impact to marine radars, et cetera. By retaining the planning goals as outlined in the draft report, or even reducing them to better understand the impacts of offshore wind and all of the above, the State of California can join our neighbors to the north in seeking answers before our oceans are littered with questionable technology.

And I will just close by reminding you all that between 1903 and 1962, we decided it would be a great idea to dam up all of our rivers to provide hydroelectric power. And now that we've seen the habitat and ecological impacts of those, we can't wait to tear them down. Thank you.

MS. DEMESA: Thank you. Next, we're gonna go ahead and hop over to Jana Ganion. Jana, go ahead and turn on your camera. Oh, I see her up there.

MS. GANION: Hello everyone. Can you hear me okay?

MS. DEMESA: We can.

MS. GANION: Okay, great. So, my name is Jana Ganion, I'm the Sustainability and Government Affairs Director for the Blue Lake Rancheria tribe. And, I'm also a Senior Adviser to a new regional effort called the Redwood Region Climate and Community Resilience Hub, or CORE Hub for short.

Just a couple comments here, and then I really look forward to the Q&A. You know, offshore wind really does provide the first multifaceted, deeply economically opportunistic industry to come to these rural and tribal regions in the better part of 60 years. I agree with others that have spoken here today that the climate crisis is what is constantly at our back. It's impacting the ocean and the species that live there. It's impacting our ecosystems in dramatic ways that we have to deal with now, even as we try to find measures that are more adaptive and mitigate the carbon emissions that we have now.

So, when we set bold goals in California, and when we do the same in tribal nations, we tend to achieve them. In the redwood region, we're working on socializing a new goal to become the first proven carbon sequestering rural and tribal region in the United States and perhaps the world.

Offshore wind is of course, an important facet in this kind of goal setting. The Port of Humboldt Bay is well positioned to support the Pacific coast's offshore wind energy ecosystem. And at the same time, the question that we're hearing from our region, and particularly from multiple tribal nations in our region, is how will this industry be different?

We've had the gold rush exploitation. We've had the timber rush. We've had to, some degrees, the cannabis rush. We've had several industries that are extractive, even of the public trust, and leave behind a serious human and environmental footprint that we're dealing with. Nuclear energy is one of those as well.

And so, how are we going to flip business as usual? Which is what we have to change to incorporate this massive new industry. Landside investment must happen. So, it's going to happen close to where these world-class wind resources are in Northern California, in southern Oregon, and adjacent areas.

And as a part of that, community benefits including clean energy, reliability, and equity are potentially a part of that. You know, there's lots of stories from, from tribal nations around energy development and other extractive industry, where these things are developed, and there's no benefits delivered

to that regional community. That has to change here.

At the same time, these ancillary economic benefits —— tribal nations are positioning to see what is possible for tribal ownership of supply chain and wind industry components, as one example. Most of these are at risk of not happening without some degree of scale, and probably large scale.

Now, in our region that is —— because of the transmission and the port side investment, that's going to happen at a ramp rate. It's not going to happen ——

MS. DEMESA: One minute remaining.

MS. GANION: A minute remaining, thank you. So we know there's analysis, the kind of analysis that is happening here today, that has to be attendant to this industry. We know that adaptive management, monitoring, compliance, enforcement, all of those things are a piece of it. But we know also that, if we don't get —— if we don't accelerate toward climate solutions, much of that is not going to matter.

So I would, you know, from our standpoint, from the tribe's standpoint, we recommend setting a top level goal commensurate with the climate crisis and the progress we have to make, with the understanding that this ecosystem that is in this room and at this table, and others who are not but should be for procedural

justice, will make sure that this industry happens as it should, in a way that makes green good, which it —— not all, you know —— it is not always good. But in this case, I think we, we can do it together.

So, thank you so much. It's great to be in this discussion, and we look forward to the Q&A.

MS. DEMESA: Thank you, Jana. Next, we have Sofia Magallon. Sophia, if you'd like to make some comments, go ahead and unmute yourself and turn on your video.

MS. MAGALLON: Yes, hello. Thank you for the opportunity to speak today as a panelist. My name is Sofia Magallon. I am a resident of Oxnard, California in Ventura County. And I'm here as a policy advocate with a nonprofit organization, Central Coast United for a Sustainable Economy, or otherwise known as CAUSE, and we are located in the Central Coast.

I appreciate the state's recommendations and would like to state that as an organization, we are newer to this conversation and we are continually learning. We support the offshore wind project, as it is a major opportunity to electrify the grid and reduce emissions from non-renewable energy that currently exist. Though as this project is developed, we would like to see continued research on costs that will be

borne to disadvantaged EJ communities in the region, in an effort to shut down and remove fossil fuel plants and infrastructure.

We would respectfully ask that this offshore wind project guarantees that disadvantaged communities, such as Oxnard and Ventura County, which have borne the brunt of fossil fuel energy system from decades of pollution and inaccessibility to the coast, will not be left behind during this clean energy transition.

The California Air Resources Board, in their scoping plan, projects that we need 10 gigawatts of new gas plant capacity. But, we should not be spending any money on new fossil fuel infrastructure. We don't need more gas plants to have a reliable grid. We need more and diverse renewable resources. For example, by investing in this offshore wind, even small amounts, we can significantly decrease the amount of solar needed by half, lower dependence on imports and in-state gas, while supporting reliability through a more diverse resource mix.

Though it is proposed that this 10-gigawatt gas build out will only run under reliability emergencies, when gas plants start up and shut down they can emit up to 90 times the NOx emissions that they produced during steady state operations. 78 percent of

California's gas plants are located within five miles of a disadvantaged community. So, this new or existing gas plant capacity would worsen existing environmental racism and injustice.

Frontline communities will be the ones to carry that pollution burden unless we reduce electric sector emissions to zero. Further, an LA Times editorial released only three days ago on June 24th, states that to prevent power outages, Governor Newsom plans to keep power plants online, including the Ormond Beach power plant, after it was stated to close out the end of next year, as well as a few others along the SoCal Coast including quote, "the long planned closure of Diablo Canyon, the state's last nuclear plant, may also be delayed as part of the contingency plan," end quote.

I urge the commission to work with other state agencies as we develop this offshore wind project to guarantee grid reliability and to stop the build out of more new gas that harms our communities. As this offshore wind is developed with a vast gigawatt power, it is a huge opportunity to shut down the regional fossil fuel plants.

To add, as mentioned in the staff report, there's a strong chance the offshore infrastructure may

be shipped off the port of Hueneme in Oxnard, adding to the pollution and diesel exhaust that residents have already been exposed to. I would respectfully ask that the cost be balanced by community benefit agreements with these EJ communities in the region that can be written on paper before this project moves forward.

Community benefit agreements that would be essential to protect Ventura's EJ communities, especially Oxnard, would guarantee again that these existing plants be shut down and sites be cleaned up, that EJ communities will be prioritized to receive the renewable energy produced from the offshore wind, as it will repair the harms caused by the current dirty energy systems, and targeted local and equitable job hiring for residents of disadvantaged communities.

Thank you so much for your time, and opportunity to speak.

MS. DEMESA: Thank you, Sophie. And Scott, that concludes our remarks from online participants.

MR. FLINT: Great, thank you, Rhetta. Now, we're going to move into question and answer and discussion portion of the roundtable. And, I would like to first open it up to our agency leadership to see if they have any thoughts or questions for our stakeholders and tribal representative this afternoon.

For those in the room, please use your name plate and tent it up if you'd like to comment or ask a question, and folks online please raise your hand, use the raise your hand function.

Commissioner Vaccaro?

COMMISSIONER VACCARO: Well, thank you to everyone who just presented and who's spent so much time and commitment on this topic. It’s really important, and these perspectives, I think, are important for all of us to hear. So this is really kind of a pointed question. And, I wanted to ask it of the study folks as well, but we were running out of time. So, just really trying to get back to what AB 525 is tasking the Energy Commission to do with this first deliverable, which was really establish those megawatt offshore wind planning goals for 2030 and 2045. Not in a vacuum, not aspirationally, but in the context of 12 enumerated factors Energy Commission staff indicated in the draft report.

Here's how we looked at those factors. Here's how we weighted them, considered all of them, but gave more weight to some than others. And I think one of the things that I'm still listening for, and want to learn from others, is really, how are you all applying those factors? I'm not hearing it. Sometimes in some of

what's being said, it could be because I'm missing it, or it could be because it's just not —— oh, this is Factor 12. But really, you're talking about a specific factor. So, this is to everyone. If you could maybe talk just a little bit about how your perspective on the draft report is shaped by those factors, and how the planning goals from your perspective, do or don't appropriately consider the 12 factors? It's for anyone who might wish to, to answer.

MR. FLINT: Amol —— in the room, Amol? Would you like to answer, please?

MR. PHADKE: Hi there, thanks for that question. I think, when we were, kind of, designing the study, we were pretty sharply focused on those factors. And in a sense, what they're trying to understand, is that —— okay, what is the benefit to the grid, to the ratepayer? And, how much can we deliver practically?

And that's how, how we are considering several other, kind of, environmental and competing considerations. So, that is why we were, kind of, sharply focused on understanding how much offshore you can do to meaningfully add to diversity, because this is one of the key factors.

But what do we mean by meaningfully adding to diversity? If you are deploying, say, 10 gigawatts by

2045, and if it's say, adding six to 8 percent to the total clean supply requirement, we felt that it kind of falls a bit short in terms of meaningfully adding to resource diversity.

So, that's why we considered a higher target —— not just we like higher targets, we don't actually like higher targets —— to see whether you can actually have a more balanced portfolio of, you know, 30 percent of the power coming from non-solar.

Then we considered costs. Like we didn't —— we started to see that the cost started to go up beyond 50 gigawatts. But we had that cost, so that's why we didn't kind of just focus on a number, but understood, tried to assess a range of scenarios going from 10 gigawatts to 100. So, from a cost perspective, we looked at that.

And lastly, coming to the feasible potential. And this is where I think, as a community, we need to do better, and we need to come together. So, like in the question on hand is that, can we actually find 50, or whatever, a significantly higher number, if you consider all the exclusions that are being discussed today, which the studies do not yet fully, adequately, take into account?

So, on that question, my argument would be

that even, my gut, again. I think we need to do more work. And this is just my gut as a scientist. Is that, we shouldn't base the decisions based on current technology. If you think about the relaxation of that constraint, it you think about the higher packing fraction, if you think about what's available in Oregon, you could potentially consider. But this is where most of the work needs to happen, really, so that we are sure of that. But my gut tells me that if you are choosing from an 800-gigawatt total pool, I think there's an incredible opportunity to take the feasibility into account.

MS. ANDERSON: Hi, this is Hillary Anderson with CEC again. Please, before you start responding to the questions, state your name, your first and last name for the court reporter. Thank you.

MR. FLINT: So, in the, in the room, we'll take Kim Delfino and then Molly Croll—— and then we'll go to the virtual participants next.

MS. DELFINO: Okay, thank you. Kim Delfino with Earth Advocacy. So, I think that the Energy Commission's report does a good job of looking at the 12 factors, but then really drilling down and saying —— okay, for purposes of practically getting energy online, as quickly as possible, to actually meet a 2030 goal,

which by the way, is not that far away when we think about this, you know, given what you have to build, the infrastructure, the transmission, all of that. That is not an insubstantial thing to do. And 3 gigawatts alone is a enormous amount of energy when you consider there's only 14 of these types of projects out there.

So, you drill down and you got —— the Energy Commission staff highlighted five factors. I think they picked the right factors. And they're —— because they're looking at it from a practical, what's feasible, what, what can we do at the end of the day? And you know, one is looking at the SB 100 report. That's thinking about transmission, like, trying to really look at transmission across a couple of decades. Doing it a little bit differently, and I think very smartly.

The second is looking at, you know, long term transmission infrastructure planning. Again, in order to bring these electrons to actual houses, or to, you know where you need to use them, you're gonna have to build an enormous amount of infrastructure to be able to do that.

And there's a lot of uncertainty out there. I mean, I raised the Diablo issue. I think that's getting debated right now in the legislature and if that's not retired, that has a real impact on like, you know,

transmission and the decisions you're making. And then, you know, the need for reliable energy during peak. Of course, I mean, we have to figure out like, how are we dealing with —— we have so much solar, and you know we have these energy needs, and aligning things up so we're not having blackouts, which is —— certainly, none of us want to have that.

And then, looking at what does wind mean on you know, the California coast. And then the last thing, which is the thing we're grappling with right now with all the stakeholders. Again, this is a seascape that has many, many users. It is not an easy place to plan. So, I appreciate the fact that, you know, academics and scientists are saying hey, what can we po—— you know, what can we possibly get out? Let's set a 50-megawatt goal and, you know, see what that means. And then sites to like China and, you know, the UK. I would note that the UK has an 8,000 mile coastline, and China has a 9,000 square (sic) coast mile. You know, we've got a 1,000 coastline. What, 1,000-mile coastline.

So, you know, I think it's incredibly important to be practical. Having done these types of planning exercises before, in the desert, we —— you know, we —— I've done a lot of planning where you spin your

wheels and don't get anything done. I think that the plan —— that the way this report is set up and the factors that are being looked at, they're practical. They're going to get us to what we need, and we need to be doing that. And so, from my perspective, I think they, you know, the Energy Commission staff chose correct factors. Thank you.

MR. FLINT: Molly?

MS. CROLL: Thanks, Molly Croll, and thanks for the question, Commissioner. I'd point to a few things. Criteria one, was the results of the SB 100 analysis. And, as I think some of the studies have pointed out, those are probably a little bit out of date at this point. And, if we factored in higher electrification, green hydrogen, and released the constraint that was in the model that limited it to only selecting 10 gigawatts of offshore wind, I would not be surprised if we resulted in more like 20 gigawatts or more by 2045. That would be factor number one.

Criteria two and three are about attracting supply chain and workforce development, which are directly related to scale. And, as we see around the globe, our competitors, and in the nation, rising their ambitions, we have to raise them to match. Otherwise, investment will go to those places and not here. So, we

have to sort of get out of the chicken and the egg of —— we don't have enough infrastructure to make deployment feasible, but we don't have enough deployment within our pipeline to spur the necessary investment. And the way we get out of that is for the state to set goals that are significantly ambitous enough.

MR. FLINT: Thank you, Molly. Before we jump online, I think we have —— do we have one more? We have one more tent at the table, and then we'll go to online.

COMMISSIONER VACCARO: So, real quick though, Scott, was there anyone online who was going to answer my question?

MR. FLINT: There ——

MS. DEMESA: No, no, we have some additional questions online, but nobody raised their hand.

COMMISSIONER VACCARO: I just wanted to make sure.

MR. FLINT: Sorry. So, I think that's it. Anyone else wanted to answer the Commissioner's question? Or, are we have more questions? Jennifer wants to speak to that, Commissioner. Please, state your name ——

MS. MATTOX: I will, thank you. My name is Jennifer Mattox. I'm a Science Policy Advisor, Tribal Liaison, at California State Lands Commission. And I

know I didn't speak earlier, Commissioner Vaccaro, but I really appreciated you bringing us back to the topic of today. The, the factors, the analysis, what went into it, how to prioritize.

The State Lands Commission staff committed —— you know, we reviewed, and, and we provided some feedback as one of the partner agencies for AB 525, and agree that, that those factors were appropriate and appropriately applied. The State Lands Commission looked at these analyses through the lens of, of its grounding principles of the Common Law Public Trust doctrine. And, we have five pillars that we think align really nicely with those factors. And that's maritime, commerce, navigation, fisheries, recreation, open space, and in addition to the uplifting of tribal and indigenous voices and environmental justice communities.

All that's been talked about today. And, I had a real reaction not only to what you said, but also to what Kim spoke about, of the difference between, you know, technically feasible or possible and and what is actually, sort of, realistic. And, when I speak of those five pillars of the public trust doctrine, you can see that in this parti—— to take this is like the perfect lab for all of that. Right? Because commerce and California's economy runs through its ports. It runs

through shipping. It runs through exports. It can run through this new industry.

But there are also considerations that Mike Conroy brought up. If we're saying 75 percent of the coast is off limits because of DOD or sanctuaries. Now the shipping lanes are being pushed around. Now, Mike's constituents are being pushed around. And in that, all of this offshore wind is supposed to fit.

So, I just wanted to just provide our, kind of, reaction and support for what the Energy Commission is doing, how it's grounding its analysis. And then also, kind of, add that extra note. We also sort of have broad oversight authority over the major ports and harbors, the infrastructure, which is woefully inadequate for this task.

Our port partners have a lot on their plates right now, as they're seeing a huge increase in population of California without a lot of infrastructure upgrades, and a big push to electrify the ports, which is a whole nother factor. So, they are working hard and working a lot. And so that should go into this feasibility, what is realistic to deploy by 2030, and by 2045. And where those ports services are going to come from to achieve that goal, and is it realistic?

So, that's just something that we're thinking

about. And I thank you for reorienting us back to today's task.

MR. FLINT: Thank you, Jennifer. Let's go —— there are folks waiting, we can't —— we'll go to online, and we'll come back to the room, if that's all right? How many folks are waiting online?

MS. DEMESA: We have two folks in line who have raised their hands. This is Rhetta with the Energy Commission.

MR. FLINT: New questions, right?

MS. DEMESA: Questions, correct.

MR. FLINT: Okay.

MS. DEMESA: Let's go ahead and go to Commissioner Rechtschaffen.

COMMISSIONER RECHTSCHAFFEN: Thank you. Hillary, I have a question for Jana Ganion. You, I —— you said, at the end of your presentation, you were recommending a top-level goal. But I don't know if I heard you say what that was. Do you have an opinion about a specific set of targets, policy targets?

MS. GANION: I don't. I think —— I think if the general —— it's a general encouragement that, you know, when we talk about what's feasible, I think we need to be really careful about getting too fixed on one

point on that. Because, you know, you can take micro grids and distribute energy resources as an example that what was feasible seven years ago, has completely changed.

So —— and, this industry, and its international footprint, has, you know, real opportunity to scale quickly. And I'm not saying that that's necessarily what each region would want, or each constituent wants for that. But, I'm saying that planning goals are that, right? They're planning goals. And, and I can tell you that the Port of Humboldt from, from working on this for the last seven years —— you know, our region is, is mobilized on this issue. Both the concerns, the environmental concerns, the impacts to current users, but also the economic opportunities that are possible for the first time in, you know, the better part of a half a century. With the opportunity to do it well, with community benefits that are tangible, and mitigations for impacts that are unavoidable.

And. And, the Port of Humboldt is situated, it’s one of the few ports on the Pacific Coast that's well situated to support the entire Pacific Coast build out. There is a lot of enthusiasm around the potentials there. Again, with the proper regulatory safeguards. And at the same time, it is likely that if industry and

others don't get a clear signal about scale, or potential to scale —— and we don't know if it's going to happen or not at this point —— that, that there will be very little opportunity to, to really ramp up on those land-side supply chain and other features in the timeframe that we're going to need to meet the industry.

And, in our region, I'll just add, and, I think that this is true in others —— there's the real potential for a 150-megawatt project to happen soon. We know that's small relative to the goals that we're talking about. But, but, it's a real risk that if we don't give clear signals to, to everybody involved in this, that that project won't happen.

We risk real —— we risk missing out on energy reliability, energy resilience in our region, which I will say is now provided by a single natural gas power plant that's connected by one ten-inch natural gas transmission line that is completely vulnerable to earthquake and tsunami. We don't have any transmission that's large enough to be redundant to that power plant right now.

So, if that power plant goes down, to say nothing of the fact that it's fossil, our region is in the dark. Except where we've created micro grids and other, you know, other sources of backup generation.

And that happened in the public safety power shut off event in October of 2019. And it caused extreme suffering, even though that event was approximately 30 hours.

So, imagine in this rural, tribal, geographically isolated region, what an outage of two weeks or more, could mean for our economy. And, and so, so I don't have a goal for you, Commissioner. But I, but I would say that where the tribe has set bold goals that we weren't quite sure how we were going to meet, we ended up meeting and exceeding them. That's what tends to happen with good bold goals. So, I'll leave it there. Thank you.

MR. FLINT: Thanks.

MS. DEMESA: Next online, we have Mark Gold.

MR. GOLD: Thank you. So, this is Mark Gold, and this is a question for Mike Conroy and Kim Delfino. As you know very well, the original draft of AB 525 had targets of, excuse me, 3 gigawatts by 2030 and 10 gigawatts by 2045. There was some controversy over the targets, probably in both directions. But I think historically, the environmental NGOs and the fishing community were a little bit concerned about how large the targets were.

I have to tell you, I was very heartened to

hear what seemed like strong support, especially from the environmental NGO community, and support, Mike, from the from you, anyways, representing the fishing community on the approach within the draft, which includes the 3-gigawatt target for 2030 and then the 10 to 15 range for 2045, with the, obviously, the extensive analysis using the various different targets, and an admission that some of the targets need much greater analysis, which is occurring right now through things like the sea space process.

So, my question is for you, is —— why do you support the larger targets? Is there a rationale that you can provide to us, so that we can understand that better?

MR. CONROY: Kim, do you want to go first?

MS. DELFINO: Sure. I think that —— I think that the, oh sorry. Kim Delfino, Earth Advocacy, I apologize. I'm a little rusty at this. Use —— I'm so used to the Zoom where you have, like, your name, you don't have to ever say anything.

So, I —— you know, speaking from the conservation side, I think that, you know, we've all accepted that offshore wind has a place in our energy portfolio. And I think people have become accom—— are

you know, they're looking at this planning goal as a floor, not a ceiling. That was something I think, I want —— I just wanted to make a point of.

So, I think that they're comfortable that this is something that potentially could happen. Like I —— and I keep thinking this point. It feels like people are thinking like three megawatts isn't very much, but in, by 2030, but three megawatts is a lot in what we're talking about here.

MR. GOLD: You mean gigawatts, right?

MS. DELFINO: I mean gigawatt, sorry, I always do that. Gigawatts. And, you know, 10 to 15 is, is even more. And, you know, frankly, if we can do the sea space planning, and we have the infrastructure, and the technology improves, you know, I think everyone would be thrilled if we could have more. I think for the purposes of moving forward with this particular report and exercise, we want to, you know, set the goal and be able to move forward.

There's many other planning processes that are happening in the state with respect to transmission and reliability, that, you know, we can be examining other aspects of this goal. So, you know, I think —— it's funny that you're pointing out, like, well, you're, you're picking a larger target. Yes, we are. We're

trying to pick a target that is bold, but doable, I think is the way we're kind of looking at it. And to set something that's so off, in terms of, like, not factoring in all these other factors, we just don't think is good planning, or prudent.

And so that's just, you know, my perspective. And, you know, frankly, you know, a 3-gigawatt target —— if everything falls in line, there's nothing stopping an industry from scaling up even more. I mean, it's not like California is setting a 3-megawatt goal, or a 10 to 15. I'm sorry, gigawatt goal. Or a 10 to 15 gigawatt goal. It doesn't mean industry, you can't do more, you can't scale up. It just, it's just for purposes of this particular exercise, this is what's feasible, which is what AB 525 asked for. So, thank you.

MR. GOLD: Thanks, Kim. Mike?

MR. CONROY: Yeah, no, I appreciate that question. I mean, to be clear, I would relish planning goals of zero for 2030 and 2045. But, I also realize that that's really not a helpful position to have. You know, we have lease sales that are scheduled to take place soon, that will generate and lead to deployment of that 3 gigawatts.

Do we like the areas? No. Are there other areas that would be, you know, better suited for our

operations? Yes. But, you know, you can't, you can't put that genie back in the bottle, so to speak.

You know, I think in terms of the 2045 goals, you know, we'll learn a lot from this —— from the two sites that we have, you know. We'll get some answers to a lot of the questions that not only we have, but some in the environmental community have as well.

I mean, if, if we learn that, you know, these offshore wind farms are going to wreak havoc with the ecological function of the California current, then maybe we revisit that. But, you know, that's kind of where we're coming at. But yeah, no. I think, you know, in terms of where we're at today, and what the ask was today, you know, retaining the planning goals in the draft is a much more attractive option to us than increasing them.

MR. GOLD: Thanks, Mike. Appreciate it. That was it for me.

MR. FLINT: So Rhetta, if there's one more principal question from the virtual participants, we can take that.

MS. DEMESA: We do not have any more virtual participants with questions.

MR. FLINT: So, we'll come back to the room for a few final comments. So, Jacqueline, you wanted to

make a comment?

MS. MOORE: Yes, thank you. And, I was actually wanting to comment on the Commissioner's first question. So, if I may backtrack a bit. The report was a huge undertaking by the CEC staff, and I think they certainly should be commended for it. I think they were realistic, while setting achievable goals that are still being bold and will still set California as a leader in the forefront.

And, as Ms. Delfino said, 3 gigawatts is not nothing. It will more than power every port of the state and the surrounding —— and the disadvantaged communities. So, 3 gigawatts will make the industry and many of the citizens very happy. And, I do think all the factors that you spoke to, I think they were appropriately addressed. Even though I was called an "other" ocean user, I will still accept that.

So again, the —— I think the staff should be commended for this, and I look forward to seeing what these goals are. But, I will be very happy with 3 gigawatts and those down in the ports will take it.

MR. FLINT: Thank you, Jacqueline. And we'll finish with —— at the table with Commissioner Gunda.

COMMISSIONER GUNDA: Thank you. Thank you, Scott. And, thanks to everybody for the excellent

comments both this morning. The presentations were very helpful to frame the discussion from a technical standpoint, but also the comments. So, as I mentioned earlier, and, kind of, haven't had a chance to really dig into the sites or —— whatever questions I'm going to ask is more from the spirit of learning and trying to advance the discussion.

So, I, I want to both respect the collaboration that has occurred till now in really trying to frame the discussion, but also look at the opportunity in terms of, you know, to just kind of expand the discussion a little bit more given the time we have right now.

So, I've been, sort of, through the day, I've been kind of like putting this into four kind of broad categories for myself on how I would, you know, begin to frame this for myself. And, it seems to be, you know, what's the offshore wind opportunity? You know, just technically, you know, feasible. And then the second portion of that, the second question from there follows —— what is the need for California? In terms of, like, you know, my focus, which is reliability and ensuring that equity also means retirement of gas in disadvantaged communities and ensuring that happens.

So, those are two portions of the questions.

I think we have a pretty clear consensus that there is an opportunity, and there is a requirement for diversity of technology that allows for, you know, retirement of other resources and constraints.

And then comes two other points. One of the questions is another —— what are the concerns for the positive and negative from different stakeholders? And I'm trying to learn that today. And, and also parties. And in the tribal nations. So how do we think about that? And, the last, kind of, question is where I want to frame a little bit of discussion. You know, I kind of looked at the 12, 12 different factors, and while there are clearly marked lanes, but as Jacqueline mentioned —— they had left out. But, you know, get captured in a different way.

There is —— there seems to be some latitude on how we think about those 12 factors. So, then the question comes in as —— what is the point of having a goal, in terms of both high, or low? So, what I heard is, you know, there is concern that even the 3 megawatts for 2030 might be ambitious. But we are going to try and move there. So, at the end in 2045, then given that we have 20 years to go, we —— should we not adequately take into account a broader opportunity there?

So, just wanted to kind of ask that question purely from a learning perspective, and recognizing, you know, the conversations and collaborations that occurred before. You know, how do we approach the goal from the perspective of improving technology opportunity? Given that we have a timeframe here. And nothing is certain, and how do we really frame that in a way that, that allows California's clean energy transition as effortless as possible?

Anybody?

MR. PHADKE: I, I totally see that the conc——

Oh, Amol Phadke.

COMMISSIONER GUNDA: Amol, before you go, the previous commenter was Siva Gunda from California Energy Commission.

(Laughter)

MR. PHADKE: Amol Phadke from UC Berkeley. You know I think —— I do see it from two perspectives, like from our—— Like, first is of course that 2030 is really close by. Right? To somebody saying we don't have the ports, and how can you propose a higher target by 2030? That is definitely, like —— our study is more from a technical perspective. We didn't —— we can't claim that we know that this can be deployed by 2030.

That being said, we have to, kind of, work backwards. I would say okay, if you want to meaningfully contribute to resource diversity, and if you want to add sufficient resources to meet our decarbonization goal by 2045, what do we need? Let's just pick a number, okay? We want, we don't want it all to be solar. Say if 30 percent is coming from offshore wind, what number does that give us? That gives us about 40 to 45 gigawatts. So, we definitely know that 15 gigawatts by 2045 is not going to cut it if you value resource diversity.

So then, okay, if that's kind of the broad goal to meaningfully contribute to resource diversity, you have 40 gigawatts, 50 gigawatts, you can pick. Then, one thing I was thinking, maybe 2030 is too close. So, in our strategy we considered a more intermediate goal by 2035. It's still near enough to meaningfully impact policy, but far enough for us to potentially deploy supply chains.

So, we —— what we considered is a 10—— a 15 gigawatt goal by 2035, with an eye on meaningfully contribute to resource diversity. I think what —— we don't, I think, have an option given climate change and how much clean power we need. Is, if we say, "Oh, we're gonna just do 10 gigawatts," then we are not

meaningfully providing clean supply. We need to find some other resource maybe CCS, nuclear, everything has its problems. So, I guess I would approach it backwards.

MR. FLINT: Thank you. Kim?

Hi, state your name ——

MS. DELFINO: Kim Delfino with Earth Advocacy. No, these are —— actually I really liked the way that you've, sort of, binned these and then the way you're thinking about it. And I, you know, I think that —— I think that the 3-megawatt is a very reasonable goal. It's a little aspirational, honestly, even for 2030.

Looking forward into 2040, 2045, 2050, there's so many variables and unknowns. Technology is changing really quickly. Technology's changing really quickly in terms of storage. So, you know, we're making a lot of assumptions about even how much wind we might actually need. We don't —— it's hard to, frankly after, gosh, last two years, it's hard to predict a whole lot. But, you know, so I guess the way I think about it is, is that if the word feasible was used for a reason, it was just sort of say, like, based on what we know now, based on the factors that we have, when we're trying to figure out this planning, we're trying to figure out infrastructure, we're going to set some feasible goals.

It's not saying that those goals now are set in stone forever, and particularly for those 2040 and the 2045. And I, you know, I would harken back again to looking at, I mean, maybe this isn't everyone's favorite, but, when the Energy Commission worked on the DRECP, it did a very good job of planning out and thought thinking through very carefully about what the right mix would be to hit a goal for the desert's contribution, and it's a reasonable goal.

And, and that has helped drive transmission investments, it's helped drive a lot. And so, there's a lot to be said about trying to be motivating yet prudent in how you're sort of thinking these things through. And so that's how I'm looking at it. And again, technology changes. We used to —— we thought solar-thermal was going to be providing a whole lot. And, it turns out that, that didn't quite work out.

So, we have to be flexible too. So, I just, you know, I think it's a balancing act here. And again, we can change those goals, particularly going out into 2045, 2050. And we should. I mean, that'd be dumb to pick a goal now and say like, that has to be our goal, like all the way out until 2045. We're gonna have to be flexible about that. So that's kind of how I'm thinking about it.

MR. FLINT: Thank you, Kim. Molly Croll?

MS. CROLL: Molly Croll. Thanks. Thanks, Commissioner Gunda for the question. It took me a while to hear what I think you were asking. But, I think you were sort of getting at —— well, from what we're hearing, why don't we do 3 by 30 and maybe more? You know, think about 20 by 2045.

And respectfully, I would refute a little bit of what you said, Kim, that, you know, even if the state sets a 3-gigawatt goal, industries can still get to five. I don't think that's true. Because then we're missing the market signal, which is driving investment. And we need to be planning if we're really gonna get to five by 2030. Or, you know, maybe it's five by 2032. And nobody would call that failure. Like that would, that would be good.

But, we need to be doing the planning and the infrastructure structure investment now. This isn't like a, we can just piecemeal sort of chunk along, like, with our infrastructure investments over the next, you know, seven years. We have to be aiming for it now. And if we know that, ultimately, we want to get to the 20-gigawatt scale or maybe more, we should start planning for that now by setting a reasonable interim goal at 2030 along that path.

So, you know, I think I would look at it differently. And I would also remind everybody, and I know everyone's read the bill a lot of times, and we've talked a lot about feasible, the term is maximum feasible. It's not 100 percent feasible if everything goes perfectly well. It's what are we —— what are we trying to get to that's maximally feasible as a planning goal.

So again, just emphasizing the importance of this for market signal, infrastructure planning, and what we want to achieve in the long term. Thanks.

MR. FLINT: Thanks, Molly. I think we have just one more response and then we'll stop and move to public comment and close out the roundtable. Did, did Mike wants to respond online?

MR. CONROY: Yeah, thanks. Mike Conroy from the PCFFA. You know, it appears to me that the planning that has been done to date, and that was covered —— and a lot of the science that fed into this workshop was done in a vacuum. I think, you know, it was looking at just offshore wind and its potential and not looking at, you know, potential impacts to other users.

I would like to think that as we, you know, move beyond the 2030 goals and plan for whatever's in store for us at the 2045 level, that we take a more

holistic approach and involve everybody who is going to be potentially impacted so that, you know, we have a mechanism to either avoid, minimize, and for those who can't be minimized, mitigate it.

You know, we've —— the, the fishing industry, and I believe Jacqueline would agree, the shipping industry, you know, by and large has not been a part of the process, especially at the federal level, in the designation of the Call Areas that are now Wind Energy Areas that the lease sites are going to take place.

So, I would think that we could learn from our past, and as we move forward, you know, we really sit down and all work together to find those areas where, you know, the impacts will be avoided and or minimized. Thanks.

MR. FLINT: Thank you, Mike. So, I think we——

COMMISSIONER VACCARO: I see Walt has his hand up.

MR. FLINT: Walt?

COMMISSIONER VACCARO: And then Neil, and then I think we really probably need to shift into public comments.

MR. FLINT: Okay. Rhetta, do you ——

MS. DEMESA: Walt, go ahead.

MR. MUSIAL: Hi. Just before we ended, I just

thought I'd mention a few things that I haven't heard anyone talk about yet. But, just thought I would provide that, maybe for perspective. First of all, this is, you know, a global industry that California is engaging in. And it was mentioned a couple times there's 14 turbines —— that's probably about —— that’s close, I think that it's growing.

But the, we're seeing it when we look at the market projections worldwide, we're seeing enormous growth that's about to start. It’s important, course none of that's set in stone, but by 2030, there is expected to be about 10, let’s say 8 to 12 gigawatts worldwide. So I think that we should be watching that trajectory and taking that into account.

The question came up, you know, can Morro Bay, I think this rightly so. I think it's been said many times, this development —— except for maybe the 150 megawatts in Humboldt that might be possible without transmission upgrades, Morro Bay would have to take the rest of it. There's a range of technology capacities that that could hold, certainly 3 gigawatts is on the the lower side of that. But a full buildout might take, you know, beyond that. So that's a question to ask.

Another question is, can the ports, can a port be built? We would need a port in the Central Coast.

And, and I think, you know, is there enough time to build that? I think probably yes, but there would have to be some movement on that.

Can the grid take the power? And that's, I think, been debated. Certainly, 3 gigawatts is also a low number on that. And then, I think maybe one of the more important things that hasn't been brought up yet, how will these targets be perceived by the industry? I think Molly addressed this just a little bit.

But, you know, will the industry see and the investors see these targets as a mandate? It certainly is not a mandate. It's a planning target. But, how will they be perceived in terms of the lease prices that result from the auction that's about to happen?

And then, what is the scale of the industry that's necessary to attract that investment to the West Coast so everything isn't just imported from Asia or from other places? So, those are just my thoughts. That’s a lot there. I'm not trying to state any specific opinion on the targets, but just, those are considerations that I would just mention.

MR. FLINT: Thank you, Walt. We’ll go to Neil Millar in the room.

MR. MILLAR: Thank you. And I will keep this brief. But, I just wanted to circle back to something

that Vice Chair Gunda brought up about the purpose of the goals. And insofar as the transmission grids are looking at it from that perspective, I would say that the 2030 goal is largely more about supply chain and getting that established that that's a material commitment, a firm commitment in allowing the industry to get going.

But, it won't materially affect transmission planning, looking just at that 2030 goal. But we really do need though, is to establish what are —— an aggressive but feasible, and I do appreciate the words about feasibility. An aggressive but feasible trajectory to go beyond 2030, because, as Jeff Billinton's presentation laid out, we have a number of options. But, those take time to build. And the sequencing, we can do this better or worse, and it depends on the quality of the planning we put into developing that longer-term trajectory.

And that's where I see the real value about whether it's three or five by 2030, that's not materially going to affect the transmission planning. The trajectory to get to 2040, 2045 —— that will, and it will both create some optionality, and eventually, take away some optionality. Thank you.

MR. FLINT: Last, last brief comment.

MR. GERACE: Yeah, brief comment. Michael Gerace, Yurok tribe. I would just say, from my perspective, when talking about goal setting —— it's important to spatialize the scaling up early on. So, to say, "Well, we have this 3-gigawatt goal. But inevitably we think we'll probably do more." For a community like the Yurok tribe, that's very difficult and depoliticizing, because the possibility of expansion into their territory is not, it's not, you can't criticize it, because nobody's saying that it might happen. Although, the reports all show that development is very possible along those areas.

So, again, associating the future possibilities of goal setting with actual seascape, so that there can be that discussion.

MR. FLINT: With that, I'd like to conclude our roundtable session. We're a little over time, and this is a clue, it says "This concludes our roundtable session this morning," in my script.

(Laughter)

So, I'd like to thank everyone, presenters of the studies. I'd like to thank you for all the great work you're doing and sharing it with us today. I'd like to thank everyone else for their thoughtful, their deep thinking and thoughtful discussion, and just being

nice to everyone today while you were doing it. I certainly appreciate that. And with that, I'm going to turn it back to Rhetta, and we'll move to the public comment portion of our agenda.

MS. DEMESA: Thanks, Scott. This is Rhetta deMesa with the Energy Commission. We're now moving into the public comment portion of our agenda today. In the interest of time, we're going to go ahead and limit public comments to two minutes per speaker. And just as a reminder to folks, we also accept written comments into our docket. So, with that, I'm going to go ahead and turn it over to Dorothy Murimi with our Public Advisor's Office.

MS. MURIMI: Thank you, Rhetta. So, just a few instructions for everybody. For those in the room, use the QR codes located in the back of the room. If you're unable to use the QR codes come see me here the at this podium. If —— once your name is called, go to the podium on the other side of the room. Turn on your microphone, make sure the light is green. State and spell your first and last name. Give your affiliation if any, and then give your comment.

Once completed with your comment, please turn off the microphone, just to prevent feedback from Zoom for our participants online. For those on Zoom, use the

raise hand feature, looks like a high five or an open palm at the bottom of your screen or device, to indicate that you'd like to make a comment. And for those on the phone, please press star-nine to indicate that you'd like to make a comment, and star-six to unmute on your end.

So, comments will be limited to two minutes or less per speaker, and one speaker per organization. We'll show time on the screen, and we'll let you know when time is up. All comments will be part of the public record. I'll begin with folks on Zoom just to give those in the room time to utilize the QR codes, and then go to folks on the phone, and then finally people in the room.

So, beginning with folks on Zoom. We have —— we have Tom Hafer, apologies if I've misstated your name. Please state and spell your name, and give your affiliation, and you may begin your comments.

(Pause)

That's Tom Hafer. Please unmute on your end and give your comment.

(Pause)

Seeing no comment, we'll move on to Theodore Paradise.

(Pause)

MR. HAFER: (INDISCERNIBLE) Right there.

MS. MURIMI: Theodore ——

MR. HAFER: (INDISCERNIBLE) I did it. Oh.

MS. MURIMI: Oh.

MR. PARADISE: Hi, I'll let him go, this is Theodore, then come back to me.

MS. MURIMI: Thank you, Theodore. Tom Hafer? Go ahead.

MR. HAFER: Hello. This is Tom Hafer, commercial fishermen out of Morro Bay, also the President of the Morro Bay Fishing Organization. I've been fishing California, Oregon, and Washington for the last 50 years. I appreciate Jennifer Mattox and Mark Gold's comments on being more realistic with this. I don't know when TNC got into the energy business, but I always thought they were more into the fishing part of it. I was kind of blown away with their comments.

Diablo Canyon Call Area is a very, very important area for fishing out of Morro Bay and Avila, and probably a lot of other ports. That area should be taken off the table completely. If that was to happen, you would put a lot of the fishermen out of business. The DOD doesn't like that area for a Call Area. Steve Chung didn't say that, but they're totally against it. That shouldn't even show up on any maps at all. That

really has us worried.

Ports? There is no ports to have these things built, or maintenance. I mean, there's talk of putting a port in off Diablo. Well, that would wipe out that whole area, and part of it's an MPA. So, I don't know what they're thinking there.

And you know, I've been fishing a long time. And there's a lot of periods during the, during the year —— let's say, if a El Nino comes —— that there's no wind out there for two, three months sometimes. So, I haven't heard that talked about. The effects on upwellings, there's a lot of studies on that. And ——

MS. MURIMI: Thank you, Tom. Please finish up your comment.

MR. HAFER: Well, if there's a lot of (INDISCERNIBLE) and you know, the coastal, California Coastal Protection Act protects ocean users. So, you guys got to remember that when you —— that's never been factored in.

All right, thank you.

MS. MURIMI: Thank you, Tom. Next, we go on to Theodore Paradise. Please state and spell your name and give your affiliation.

MR. PARADISE: Sure. Good afternoon. My name is Theodore Paradise. I'm the Chief Policy and Legal

Officer for Hexicon. We're development —— developer of floating offshore wind and floating offshore foundation technology provider and thank you for the opportunity to provide some comments.

We support the work of the CEC in moving offshore wind forward for California, not only for important climate goals, but also to hedge against the higher costs and volatility of fossil fuels. A 2020 ISO New England study found that 8 gigawatts of offshore wind would reduce electric system production costs by half.

Offshore wind has long lead times, and the move to 5 gigawatts for 2030 and 20 gigawatts by 2045 are important goals to set now. The work in California should be informed by the growing pains on the East Coast where we saw smaller initial targets, despite the clear need for more energy to meet state policy goals. The mandated offshore wind targets have quickly expanded, sometimes more than doubling or tripling at an interval, quickly overtaking the early earlier goals and the planning assumptions that went with them.

Under-sizing upfront leads to more environmental and fisheries impacts laters on. You put more transmission cables in then you would have needed to, there's more environmental disruption, and also

greater costs than necessary. It's not as simple as pick a lower target and the numbers can always increase. The lesson learned is to use planning goals for exactly what they are, a planning roadmap to bring all the pieces together to assure that we're efficiently planning for larger targets while we're meeting our near-term goals.

And on that, to achieve the five gigawatts by 2030, there's high confidence that the current BOEM lease areas provide sufficient area. Modeling done by Hexicon using our TwinWind two turbine floating foundation shows an energy density in excess of 7 gigawatts for the current lease areas. And that's with greater than one-mile spacing, due to using far fewer floating structures. That is feasible.

Second, planning signals now will drive transmission and how it's designed and built. Planned coordinated transmission has been used in Europe and also now being done by the state of New Jersey for a state led RFP for an ocean grid, can dramatically reduce the number of transmission cables, along with associated costs and environmental and community impact.

Of note, last summer, FERC laid out a policy statement that noted that states other than New Jersey may use that same state-led RFP transmission expansion

approach, supported by their ISO or RTO. Thank you, for the opportunity to provide these comments today.

MS. MURIMI: Thank you. Next, we have Mark Roest, apologies if I've misstated your name. Please state and spell your name. Give your affiliation, if any. One more time, we do have written comments available. Please go to the docket you see on the screen to submit your written comments as well.

MR. ROEST: Hello. I'm Mark Roest, with Sustainable Energy Inc., and I'd like to mention structural geometries and materials are available that can slash costs and raise lifetimes. There is a —— they can also be used to bu—— create a large platform ships that can be used for fabricating, assembling, and installing wind turbines.

We also have designs for wind turbines that we designed in 12-15 years ago, and a gearless wind turbine generator that was designed in 2006 and used by NREL for the large wind turbine designs. And, we've got a cable design, that —— which would be partially super conductive and made with ceramics instead of with just copper.

And the, the —— let’s see, what else here. So, that can be used for submarine cabling, as well as for buried cable on land. And, I think that another thing to consider, is putting up wind turbines. There's

somebody doing a design for an array of turbines. And, we have some designs for large scale turbines too, which could be set up with screens on them, with basically netting, to prevent birds from going all the way into the blade.

And, I guess that's probably about what I got. Thank you.

MS. MURIMI: Thank you. We'll switch to a few people in person, and then go back to folks on Zoom. We have Kelly Boyd, please state and spell your name and give your affiliation if any.

MS. BOYD: Kelly Boyd, B-O-Y-D. You're my best friend today, for going to the people who are here now. I'm with Equinor Offshore Wind, and want to talk a little bit about —— this is a global issue not just a California issue. Offshore wind, we've been providing offshore wind for 20 years.

We have a lot of experience, as do most in this industry. We've moved from fixed bottom to floating. We have an 88-gigawatt floating facility, and we're moving to three gigawatts elsewhere. Two on the East Coast. We're in the North Sea. We're in Norway. Bringing all that expertise here all the innovation, I think that's going to be game changing for California to address reliability and climate, the two things that are

coming together quickly at a head.

From a California perspective, as someone who's lived here almost all my life, and I'm in a club with Kim that I think neither one of us ever wanted to be in, which, you know, changes your perspective on life and how long you will be around, and how long this planet will be around.

We don't have a lot of time to make these decisions and do them right. We have to work together and collaborate to get this done on time. That's something we all have to do, not just agencies, and not just providers. And we do have to hear from all these stakeholders.

I've helped form a tribal utility with Pechanga. I did the original electrification workup at —— with the Hupa and the Yurok. Very aware of those resources, and what we can all bring to these communities. Part of climate equity is picking the right resources. This diverse portfolio under SB 100 that AB 525 is helping to implement, is crucial to achieving the climate and the reliability goals together.

We have to be aggressive, 5 and 20. You can get to it if you set the goal. You can't get there if you don't. And to build up to the next step, the bigger

goal is better, so that we can get all these systems integrated at the same time. Not just for our purposes, but for other climate purposes as well. Thank you very much.

MS. MURIMI: Thank you. Next we have Mike Olsen. Please state and spell your name, give your affiliation, if any. Afterwards we have Adam Stern, and then Varner Seaman after that.

MR. OLSEN: Hi. My name is Mike Olsen. O-L-S-E-N. I'm Vice President for Policy and Government Affairs at Aker Offshore Wind. We're a global floating offshore wind developer exclusively focused on deep-water opportunities.

Through the Aker group of companies, we bring five decades of planning, designing, and executing complex global offshore energy projects. It won't surprise you that we support offshore wind targets of 5 gigawatts by 2030 and 20 gigawatts by 2045. And, we agree that these targets are absolutely achievable.

They would be industry building for California and would allow the state to reap significant economic and workforce benefits. As we have seen elsewhere, the larger the offshore wind goals, the larger the investments in domestic supply chain, ports, training, and infrastructure.

Ambitious offshore wind targets have had other positive impacts. One, is the recognition that scale matters. As we've seen on the East Coast, and other parts of the world, scale gives developers and those in the supply chain the confidence they need to invest the billions of dollars necessary to establish an industry and build a local supply chain. It drives efficiency, cost savings, and jobs.

They have also led industry and state officials to invest significantly in robust stakeholder engagement. In that vein, some of the most important elements of successful stakeholder engagement are transparency and trust. Often, stakeholders view of how offshore wind will impact them is directly related to process and scale.

While a smaller offshore wind target might result in less immediate concern among stakeholder groups, and may suggest policymakers' commitment to addressing those concerns, clarity right off the bat about how much offshore wind is necessary to meet long term clean energy targets, along with a commitment to resolving concerns, will result in better long-term outcomes.

Changing a target down the road, as we saw in New York, can cause confusion, mistrust, and stakeholder

fatigue. We ought to get the numbers correct now, rather than move the goalposts later, and pair a realistic target that truly reflects California's long-term need for offshore wind with the state's strong commitment to work with stakeholders to resolve their concerns. Thank you.

MS. MURIMI: Thank you. Next, Adam Stern, Varner Seaman after that, and then Erin Kester.

MR. STERN: Yeah. Adam Stern, Executive Director of Offshore Wind California. I want to join with my industry colleagues in endorsing the idea of going bigger in the final goals that are set in this report, to go to 5 gigawatts by 2030, and 20 gigawatts by 2045.

We believe these goals are well supported by the latest research and will more-fully take advantage of the many benefits that economies of scale can bring Californians from responsibly developing offshore wind. From the excellent testimony we've heard today, here are some key points to consider.

First, what the Commission is being asked to set per AB 525 are planning goals not procurement mandates. If we want to go big, we need to plan big. Ambitious planning goals are essential to appropriately size and scale the other key elements to deploy offshore

wind, including port infrastructure, transmission, workforce development, and a sustainable supply chain.

Second, new data and analysis presented to the Commission today by and NREL shows that the 5 gigawatts by 2030, and 20 by 2045 goals are very achievable when factoring in the industry's most likely power density scenarios. And, they can be reached at the two designated Wind Energy Areas at Morro Bay and Humboldt, and the two other Wind Study Areas that NREL has assessed on the North Coast. For California and offshore wind, going bigger is better. Thank you very much for your consideration.

MS. MURIMI: Oh. Thank you. Next, we have Varner Seaman and Erin Kester after that.

MR. SEAMAN: Thank you, everyone. My name is Varner Seaman, I'm the Offshore Wind Program Director for American Clean Power - California. American Clean Power is a national trade association. It’s multi-technology of onshore, offshore, wind energy, solar power, and storage technologies.

We’re also in support of 5 gigawatts by 2030. And most importantly, 20 gigawatts by 2045 as the planning goal. I'm going to speak briefly, and I think my comments are related to factors 4, 5, 6, and 10, in the 12 factors that were under consideration.

And, I think one of the things we haven't talked about so much here is an issue around cost. And in particular, for the decision makers who, at the CEC, who ultimately have to decide what the planning goals are in the near-term. I think one of the concerns that we've heard raised, that hasn't come up so much today, is a question about —— does a strong planning goal sort of superheat the market? And does it raise the bid price in the lease auction this Fall? And, I think a lot of folks are concerned about what happened from the New York Bight auction, and some of the pricing that happened there.

I think one of the things that we look at as a national group that had a lot of involvement, looking at the New York Bight auction, is that on a number of key factors: port development, transmission development, and most importantly, offtake —— here was a tremendous amount more certainty in the East Coast markets for all of the major factors that we look at. New York, if you look at where those maps are, they're basically a stone's throw away from downtown Manhattan. And, the state of New York was actually pretty —— a lot further along in all of these key factors than the state of California.

If you're an auction, or market participant, and you're looking at how you bid in the auction coming

up this year, I think that every reasonable person would assume that there's much higher risk in California, and that we would assume the higher risk because we haven't gotten as mature as the state of New York was when that auction occurred. Should have a suppressive effect in terms of what the, the lease prices should be when we get into the auction later this year.

So, we don't think that necessarily these planning goals will outweigh the inherent risk with those factors. Thank you.

MS. MURIMI: Thank you after Erin Kester, we have Dan Jacobson.

MS. KESTER: Thank you Erin Kester with RWE Renewables. Last name is spelled K-E-S-T-E-R. Good afternoon, Commissioners and fellow stakeholders. It's been a great dialogue today. Thank you, for the opportunity to be part of the public comment period.

RWE is the second largest offshore wind company across the world, and is excited to bring our global expertise to the US market. We are looking forward to participating in future BOEM auctions and are encouraged by the work the State of California has done to acknowledge the diversity and resilience benefits offshore wind can bring to the grid.

As suggested by my colleagues here, we

strongly encourage the CEC to set offshore wind planning goals to 5 by 2030 and 20 by 2045. I have one focused comment on the importance of scaling. A couple of our colleagues have, you know, mentioned the need to start getting some of this development kicked off and started. RWE supports bold planning goals that will create a steady supply chain and jobs by maintaining consistent growth each year until 2045, to which ports are a central nexus.

Port infrastructure development must be justified by a steady and substantial pipeline of projects. This means scale over time, as has been emphasized. Ports are fundamental to achieving thousands of family wage jobs and local economic development benefits. In turn, these benefits cannot be realized without investment in proper ports. This concludes my public comment. Thank you.

MS. MURIMI: Thank you.

MR. JACOBSON: Thank you very much. My name is Dan Jacobson. I'm a Senior Advisor with Environment California. And, we encourage the state to set a goal of 5 gigawatts by 2030 and 20 gigawatts by 2045. Environment California was a sponsor of AB 525, and we've been working on this issue here in California, but across the country for over 15 years.

And first, what I want to do, is just thank all the stakeholders who have taken time not only to come today but have been working on this issue for the past eight years, and we're probably going to have to work together for the next eight to ten years on this.

I really encourage us to have the civility, the diplomacy, the cooperation to continue to do this. This isn't easy. It's easy for us to be very emotive about this, but we have to put our heads together and we're all thinking about the one thing —— which is how do we protect ourselves, our livelihood, and the planet, really, going forward? And, I think that's the most important thing. So, I'm encouraged by that.

The second, is I really want to look at what the other states around the country have done and, and the emphasis that they're putting towards this. So, if you look at places like Rhode Island, which has got 1 gigawatt, with places like Maryland at 1.5, Connecticut at 2, Massachusetts at 5.6, New Jersey, at 7.5, North Carolina at 8, and New York at 9. These states are all stepping up, and I think doing what's necessary to set a high goal for offshore wind, and I would encourage California to do the same thing there.

And finally, you know, what's really frustrating, is that while we're here advocating on

these issues for clean energy, we're gonna have to go back over the Capitol and advocate for them to not do bad things with CEQA and other programs in the budget —— that they're trying to take away some of these core programs that we have. And, at least the excuse that I keep hearing over and over again is, "Oh, well we're in a box, we don't have a choice, we have to do this because, you know, we didn't plan big enough ten years ago, or 15 years ago. We didn't set the goals high enough."

So, that's partly why we're here today, is because we know if we set this high, and, and we'd still do the environmental protections that we need, but we have to get out of this thinking that this is business as usual. We're not in that place anymore.

Thank you very much for your time.

MS. MURIMI: Thank you. Next, we have Eddiie Ahn, and after that we have Mike Monagan. Please state, spell your name, give your affiliation if any. Thank you.

MR. AHN: Good afternoon, Eddie Ahn. That's E-D-D-I-E A-H-N, Executive Director of Brightline. We're an environmental justice nonprofit, that essentially does two things. One, we work in areas of policy with a blended skill set —— research and writing, community

organizing, and legal advocacy.

And the second main thing that we do, is direct services to frontline communities in the form of job training programs, air quality monitoring, youth leadership, and more. And for us, we've seen disproportionately and directly, how climate change impacts our communities.

And, we are definitely interested in offshore wind. We have been tracking it since the Block Island wind farm project labor agreement, to look at the economic and workforce development benefits that can arise from offshore wind, as well as looking up and down the West Coast. Looking at states like Washington, Oregon, and of course up and down California as well.

And we see the potential in this technology —— that it can create jobs, economic development that's equitable in the form of local hire and targeted hire, which you heard mentioned by CAUSE today. And also, lessen reliance on aging fossil fuel infrastructure is a major thing that we really believe in and that we've seen, for instance, can happen when you build potentially clean energy at scale.

Of course, we believe there should be deference to local communities as well. That there should be, for instance, empowering local processes, as

well as making sure there are robust community benefits attached to it. And as you heard Jana Ganion talk about earlier, making sure that this is not an extractive industry is critically important to us, as well.

Why does government exist? At the end of the day, we want to make sure that through this hearing, through this workshop, that there is, essentially reliability ensured, that expectations are set, and that all actors are held accountable in the technology. Which is why, in our minds, 10 gigawatts was actually the floor unto itself. Three gigawatts, of course, we understand, is a step toward a larger goal, and that we even believe a stronger target of 20 gigawatts can help ensure that a more robust community benefits package, for instance, can be assured to the local communities. And that, you know, going back earlier too —— I wanted to pick up on what one of the things we talked about.

MS. MURIMI: Please finish your comment.

MR. AHN: Thank you. That there was maximum feasibility, but textually AB 525 refers to maximum feasible capacity. And just understanding that comma, that it's in relation to a planning goal, is critically important. Thank you.

MS. MURIMI: Thank you. Next, Mike Monagan.

MR. MONAGOAN: Good afternoon. Mike Monagan.

M-O-N-A-G-A-N, and I'm representing the California State Building and Construction Trades Council. We have 500 thousand women and men in the construction industry in California, including 73 thousand currently enrolled in our state-approved apprenticeship programs.

The building trades were a co-sponsor of AB 525. We believe we are positioned to properly provide the necessary skilled and trained workers that you'll need to produce the infrastructure both on and off shore. I'd like to share with you just a couple sentences from a letter our president sent to the Chair of the ARB last week:

"We are excited to partner with the state to bring this incredible resource onshore to power California's homes and businesses. California should look to centralize siting and streamlined approaches to getting offshore wind and the necessary onshore infrastructure required to distribute this new generation."

Thank you.

MS. MURIMI: Thank you. Afterwards we have Patrick Boileau. Apologies as misstated your name. Please state, spell your name, give your affiliation if any. Next, we have Emily McCabe after that.

MR. BOILEAU: Patrick Boileau. P-A-T-R-I-C-K

B-O-I-L-E-A-U. I'm the Deputy Political Director with the Operating Engineers Local 3. I want to thank all the panelists for their insight and adding to the process. I was very disappointed however, that there was not a member of organized labor at the table here. In order to build the offshore wind industry in the state, you're gonna need members of unions who are going to need to be building this thing. And so, we very much think of ourselves as stakeholders in this process.

The Operating Engineers Local 3 has nearly 40 thousand members, and that includes heavy equipment operators, mechanics, maritime construction specialists that are going to be key to building this industry. In addition to all of our members who are going to be involved in projects like port development, and the transmission capacity upgrades. As such, we very much support a robust goal for the offshore wind industry and would think that a robust goal is going to cause our partners in industry to make the investments necessary for doing the whole industry.

Finally, I'd like to extend an invitation to the Commissioners, to the various panelists, to anybody else in the room. We operate a joint labor management partnership apprentice training program, situated not half an hour from Sacramento here. And so, we'd like to

extend an invitation to visit that center and to engage with us on issues of workforce development, so that we all have a path forward on the issue. Thank you.

MS. MURIMI: Thank you. Next Emily McCabb and afterwards we have Nancy Kirshner.

(Pause)

Not seeing Emily McCabb, going to Nancy Kirshner.

(Pause)

MS. KIRSHNER-RODRIGUEZ: Good afternoon. Thank you so much everyone. My name is Nancy Kirshner-Rodriguez, K-I-R-S-H-N-E-R, and then hyphen Rodriguez, R-O-D-R-I-G-U-E-Z, and I am the Western Director for the Business Network for Offshore Wind. We have been in existence for a decade now as an organization, and we have been working in the West since 2016. Very honored to work with many in this room.

But, I truly have to say that in 2021 and 2022, every week, I think, has been instrumental and momentous for offshore wind in the United States. But last week was particularly, for the Businesses Network for Offshore Wind, and I want to mention it because the federal government, which has set, as you know, large goals, has now created a partnership for supply chain development with 11 states in the East Coast. And, we

were proud to present on the status of the US supply chain, and what —— and how things are moving forward, as well as what we believe can happen in the future with sustained federal and state investment.

And several other people have spoken here about the goals in the states on the East Coast, and I just want to make the point that there's over 40 gigawatts of offshore wind where they have —— it's, it's not planning goals, it's procurement now. They are, they —— and so, for the —— for California, it is very important that we strive to have planning goals that are as large as possible, that will enable us to drive supply chain development. Because, we must have supply chain development in the West and in California in order to meet the goals that we set.

So, I want to thank you very much. We've submitted written comments, and we advocate going big now and looking towards the future. So, thank you.

MS. MURIMI: Thank you. And next, we have Nancy Rader.

MS. RADER: Good afternoon. Nancy Rader, R-A-D-E-R, with the California Wind Energy Association. The new studies, we think, support points that CalWEA made in our May comments. First, we think that ranges are appropriate for both planning goals, given the many

uncertainties that will —— we will not resolve, even by the time you're done with your later studies in June 2023.

The Berkeley report suggests that the Commission's draft report's maximum goal should be raised to as much as 50 gigawatts because of the substantial reliability benefits that are gained from a more balanced portfolio without raising costs.

Regarding the TNC study, CalWEA strongly believes that no resource area where projects can be legally built today should be off limits in our planning goals. We need to evaluate specific sites and actual impacts of the early projects before we conclude that they're not compatible with various concerns.

When high level studies were used for the DRECP, I'll tell you what we ended up doing. We ended up excluding all of the good wind resource areas in the California desert. There have been zero applications for wind energy in the desert since the DRECP was adopted. I don't want us to make that mistake again.

Second, in our previous comments, we called on the Commission to consider various risk reduction benefits from greater resource diversity. The Berkeley study put a striking number on the potential impacts of wildfire smoke on a solar dominated portfolio. GridLab

found, also, greater reliability benefits, and they noted, as we did, the need to study other harder to quantify risks from a solar-heavy portfolio, such as limitations and conflicts over land use availability.

And, we also need to consider supply chain and operational risks from such a concentrated portfolio of solar and batteries. These major benefits —— let's not under play those benefits. We just saw some of those benefits in the supply chain from ——

MS. MURIMI: If you could finish your comment.

MS. RADER: Okay, real quick. We think it's also that the 2030 goal absolutely must be accompanied by discussion of the policies that we need to get up to three or five megawatts, which we support. But, we really have to focus on ——

MS. MURIMI: Apologies.

MS. RADER: ——what we need to do to get there. Thank you.

MS. MURIMI: Thank you. Now we're going to move on to folks on Zoom. We have Maryam Mozafari. Apologies if I've misstated your name. Please state, spell your name, give your affiliation, if any, and you may begin.

(Pause)

Maryam, please unmute on your end.

(Pause)

And then, please state and spell your name and give your comment.

(Pause)

Seeing no comment, we'll move to Manly McNinch.

(Pause)

That’s Manly McNinch.

(Pause)

Please unmute on your end and give your comment

MR. MCNINCH: Hi. My name is Manly McNinch. M-C capital N-I-N-C-H. I am a representative for the Southwest Carpenters Union, and we're a labor union that represents over 50,000 well-trained men and women of all walks of life to, that can step up and do the work for these projects. And I've been hearing a lot of the comments and everything today, and lot of it sounds very promising.

And on your factor number two, the need to develop skilled and trained offshore workforce, they've got to have skilled and trained, but there's one component missing and that is local hire. We need that to clearly be stated. And you’re the lead agency on this, you and BOEM, and between the two government

agencies, you guys, it's critical that you spell it out, that it's got to be skilled and trained local hire, so men and women of this area get the opportunities to do this work. Because, a lot of these companies that are already set up and geared to do this type of work are from out of the country.

The last thing we need is for tens of millions, hundreds of millions, if not billions of dollars being spent in our country, and all the money go back to other countries. We need as much of the material that goes into these units, and the labor, to be from here in the United States.

And we strongly encourage the upsizing of the project. To —— as technology's advancing since some of these original numbers were set in place, and it's, you know, let's be ready and not let it be the California freeway system, where we —— as soon as we get something built it's outdated. Let's get out in front of it and be proactive on the size and the amount of output we put on the project. And thank you very much for your time today.

MS. MURIMI: Thank you. Next, we have Dennis McGinn, afterwards we have Alex Perez. Please state and spell your name and give your affiliation, if any.

(Pause)

That's Dennis McGinn, please unmute on your end and give your comment.

(PAUSE)

MR. MCGINN: Hello, I'm Dennis McGinn, retired Navy admiral. I'm the former commander of the US Third Fleet, whose area of responsibility encompassed all of the proposed the Wind Areas. I'm also the former Assistant Secretary of the Navy for Energy Installations and Environment. I want to say right up front, that, based on my 35 years of active service as a Navy pilot, aircraft carrier commanding officer, battle group commander, and Third Fleet Commander, that Navy operations and training are in fact, quite compatible with offshore wind development.

In fact, when you take a look at what's going on on the other side of the Pacific, with the rapid proliferation and deployment of offshore wind in places like China, Taiwan, Japan, Southeast Asia, those are the environments in which our Navy and Marine Corps forces, Army and Air Force, are going to have to operate with offshore wind. We need to be able to get them used to doing it here, certainly.

But more importantly, we have a national security threat. Our energy security, our economic security, our environmental security, are inextricably

linked. And they are the foundation for our overall national security and quality of life.

And make no mistake about it, we are in an existential race against climate change. We need more renewable energy of this scale faster than we possibly, possibly have had in the past. We want to make sure that we understand that in this race, you need to set high goals. So, 5 gigawatts absolutely. 20 gigawatts by 2045, yes. Because, we are in also a competition with —— for money, for expertise, for supply chains, and for support.

We need to have this in California. This is California. California's lead in the energy transition across the board for decades. And, we don't want to lose it by going low. There is no downside to setting 5 and 20. There is a downside if we go low and we just avoid ——

MS. MURIMI: Please finish your comment.

MR. MCGINN: ——the kind of attention we need from the financial community and across the world. Thank you very much, and this is a great democratic process.

MS. MURIMI: Next we have Michael Stoker, and then afterwards we have Jose Radillo, LUINA. LIUNA, sorry. Please state, spell your name, give your

affiliation if any, and you may begin your comment.

MR. STOCKER: Yeah, Michael Stocker. S-T-O-C-K-E-R, with Ocean Conservation Research. Thanks for the opportunity to express myself today. My concern is that this whole offshore wind proposal is being treated more as a business opportunity and less as a needed response to a planetary climate crisis. As such, we need to evaluate the earth systems impact of converting 10 gigawatts of wind energy into electrical energy.

I mention two extractive impacts and one additive impact, which I find are not being adequately addressed. The first extractive impact was highlighted by an OPC report on the impacts of wind conversion on California current system. And particularly, the cold-water nutrient upwelling, which according to the OPC report, will be attenuated by 10 to 15 percent. This is not a trivial amount, as it translates to 10 to 15 percent less life off the coast of California, California OCS.

Second extractive impact is a result of wind momentum deficit downwind of the turbines. I have not yet seen this model. But, at present, the wind brings moisture off the ocean to the coast, which precipitates as it hits the shore bringing fog and rain. California is already suffering climate crisis-driven droughts.

This will likely be exacerbated by wind energy extraction.

The additive impact concerns the effects of turbine generated infrasonic noise caused by propeller blade transect of the windstall pressure in front of the turbine mast. Many migrating birds use barometric navigation cues. We have little data on what the infrasonic noise of hundreds of turbines may have on these cues. The larger effect of these impacts are presently only speculative, and it seems as if agencies are racing ahead under the rubric of environmental assessments.

Given the potential breadth of such systematic disruption, it would make sense to proceed with an EIS, environmental impact statement, which would include performing deeper assessments of these concerns. We also might address our climate crisis needs in terms of energy conservation rather than economic expansion driven by offshore energy development. Thank you very much.

MS. MURIMI: Thank you. Next, we have Jose Radillo, LIUNA. Afterwards we have Richard Charter. Please state, spell your name, give your affiliation if any.

MR. RADILLO: Hello my name is Jose Radillo.

Thank you for an opportunity to speak this afternoon. I am with —— I am a member of LIUNA, Laborers of North America. And, I honestly believe that this project will help California achieve its 100 percent clean energy goal, as well as help combating climate change. With high gas prices on the rise, steep rise of interest rates, the future of the construction industry looks like we are approaching a very sensitive economy. A project of this magnitude should carry the American working union workers through tough economic times.

LIUNA an accredited labor training school. Both the Department of Labor and the state of California has recognized and approved the labor apprenticeship program. Apprenticeship program that provides highly skilled, well trained, and motivated workforce, qualified construction craft laborers, so you could assure that this project will be done professionally. This training gives individuals, such as myself, a second chance to be a productive member of society with the financial ability to put back into the community.

This will create the jobs immensely. It's a win-win for all. I just want to tell you guys thank you for giving me the opportunity to speak today. Thank you so much.

MS. MURIMI: Thank you. Next we have Richard

Charter, and then Jim Lanard.

Please spell and state your name, give you affiliation and you may begin your comments.

MR. CHARTER: My name is Richard Charter. C-H-A-R-T-E-R, with the Ocean Foundation. We all know that an orderly planning process involves goals milestones, and because even accelerated evaluation of on site environmental consequences of this technology will take some time, some triggering thresholds at which we need to collectively evaluate what we have learned from our initial steps, so we can decide how best to proceed into the future, are going to be necessary.

Just because Humboldt Bay and Morro Bay already possess some of the needed infrastructure for which to stage the building of commercial wind arrays and transmission connectivity, does not mean that now is the time to inappropriately jump ahead of ourselves and expand the current target goals in ways that would likely require expansion of leasing to broader areas of the Humboldt coast or into offshore Mendocino and Del Norte counties, for example.

Studies done on behalf of the Ocean Protection Council, as you've heard, indicate an approximately 10 to 15 percent decrease in upwelled volume transport, and a resulting restriction of nutrients supplied to the

coastal zone off of Morro Bay. We're talking about primary marine productivity throughout the most important upwelling systems on the planet.

Please continue to proceed with an orderly precautionary planning process with realistic production goals that don't get ahead of the rational conduct of reliable science, so that we don't impact the national treasure that is the California coast in the same way that the hydraulic miners managed to trigger open conflict with our state's farmers and a hostile regulatory framework back in 1853, leaving us with toxic tailings piles that are mercury laden in the San Francisco Bay ecosystem to this day.

Our current transition is part of a major societal learning curve, and arbitrarily skipping ahead on a learning curve of this consequence invites damage to our very life support systems. Thank you for your time.

MS. MURIMI: Thank you. Next we have Jim—

MS. DEMESA: Hey, Dorothy, apologies, this is Rhetta deMesa with the Energy Commission. Sorry for interjecting here, but we are quite a bit over time and I think we're going to have to start wrapping up our public comment. It's 2:30 right now, so I think we'll plan to go for about 15 more minutes to about 2:45. And

then we'll go ahead and close public comment for the day. I'd like to remind folks that we are accepting written comments into our docket, and I would like to encourage you to submit some written comments if we don't get to you this afternoon. Thank you.

MS. MURIMI: Thanks, Rhetta. Next, we have Jim Lanard. Please unmute on your end, state your name and give your comment

MR. LANARD: Thank you. This is Jim Lanard with Magellan Wind. L-A-N-A-R-D. Let me start by thanking Commissioner Vaccaro and her staff for doing such an amazing job with such detailed and in-depth study, review, and questions. I think that at the end of this, everybody's gonna have a much better understanding of the potential of offshore wind for California. Magellan supports the 5 gigawatts by 2030, and 20 gigawatts by 2045 that we have heard most of my colleagues talk about.

No additional sea space is required for that. The Coastal Commission has done a consistency review, which is more comprehensive than any in the United States. We don't need any additional transmission capacity, CAISO has reported that today, and we don't assume that we need any sea space at Diablo Call Area. But, if you don't plan it, it won't be built. If you do

plan it, it may be built.

Regarding the overheating of the auctions, history shows that goals do not drive auction prices. Mandates drive auction prices. In Massachusetts in 2015, three leases were auctioned. Only two were won because —— and they went for $200 thousand, about, each. And two, actually four, were offered, and two didn't get any bids because there were no mandates.

Four years later, Massachusetts adopted mandates for offshore wind. Those two leases that didn't get any bids were split into three leases. Each lease went for $135 million. From zero dollars, zero bids, to $135 million per lease, simply because of mandates. You will not be overheating the market by planning higher goals, but you will be sending signals that helps the industry figure out how to plan for this and do it economically, create the jobs, and so on.

Last thing I'd like to point out is the California Public Utility Commission's Resource Adequacy Proceeding. The energy division’s regional wind effective load carrying capability study results. They show great wind in July and August, double any of the other five regional wind areas, and greater in September than ——

MS. MURIMI: Please conclude your comment.

MR. LANARD: Thanks for your consideration.

MS. MURIMI: Thank you. Next we have Michael O'Boyle. Please state and spell your name, give your affiliation, and you may begin your comment.

MR. O'BOYLE: Hi everyone, thanks for being here so late. My name is Mike O'Boyle, O-B-O-Y-L-E, and I'm from Energy Innovation. So, I have just two key points to make. The first, is even though there's a tremendous amount of information on the record, I think there's a growing recognition from everyone here that there is an incomplete record upon which CEC can base its decision. Part of which is just the fact of how fast they had to go under AB 525. So, that may be grounds for slowing down on specific projects, but it's not a good reason to reduce planning goals, which are necessary to justify full consideration of the implications of offshore wind development, which are outlined clearly AB 525.

Imagine if, based on incomplete information about the impact of climate change, we decided not to address it by reducing emissions as fast as possible. I would argue that that kind of thinking is part of the reason why we have a major ambition gap with state, national, and global climate pledges today. AB 525 provides an opportunity to move CEC resources to paint a

much more robust picture of the role of offshore wind, by developing actual plans based on these goals and provide other agencies with data they will need to reach our net zero emissions goals affordably, reliably, and equitably.

Because we have incomplete information, a wide range for 2045, in particular, would be appropriate. This allows the kind of scenario-based analysis which underpinned GridLab's analysis that was presented today. It allows us to ask what if questions about different amounts of offshore wind, and assess the legitimate tradeoffs to different stakeholders, including profoundly local communities, ecosystems, and the fishing industry, which are represented in the hearings today.

Second, a shorter point that AB 525 requires us to determine the maximum feasible capacity as a basis for planning goals, and it's important not to conflate this maximum feasible capacity with other study outputs, such as the least cost capacity expansion, or NREL'S consideration of a limited subset of high-likelihood, low-conflict seabed. Thank you very much.

MS. MURIMI: Thank you. And next, we have Guillermo Ceja, and Mark Smith after that. Please state and spell your name, give your affiliation, and you may

begin your comment.

MR. CEJA: Yeah, thank you. My name is Guillermo Ceja. G-U-I-L-L-E-R-M-O C-E-J-A. I represent the men and women of LIUNA Local 585, which covers the Ventura County area. I'm speaking in support of AB 525 for the 5 gigawatts of offshore wind by 2030 and 20 gigawatts by 2045. We have the Port of Hueneme in our area and have partnered with them throughout the years and extended a community workforce agreement. They are the greenest port on the West Coast, and they are in support of this with us.

Our LIUNA brothers and sisters on the East Coast have been following the offshore wind projects in their area, and they've also assisted us on how some of that projects have been going, and where they're headed. We understand that our, our skilled and trained workers here in the county would benefit from this project, as well as all our local trades and the communities of color, and enter them into our apprenticeships which will lead to higher paying jobs in this project. And, also continue to build the offshore wind in our area.

We look forward to this offshore wind project in our area, and for developers, please get with us early on this project, and we can get it moving for you. Thank you very much.

MS. MURIMI: Thank you. Next we have Mark Smith. Please state, spell your name, give your affiliation.

MR. SMITH: Yes. Can you hear me?

MS. MURIMI: Yes, we can.

MR. SMITH: Okay. My name is Mark Smith. That's S-M-I-T-H, rarely asked to spell that, but I guess it can sometimes be confusing. I'm making comments today on behalf of the Coastal Conservation Association of California. We are a recreational saltwater angling group. And, I'm going to align my comments in the interest of time with those made by Mike Conroy and other folks from the angling community.

I'm gonna focus, though, some specific comments on recreational access and the challenges that we are concerned with. To start with, we are not in support of the expanded proposal that is currently under discussion today. We have significant concerns about the current placement and access restrictions that offshore wind will create within the recreational angling community.

When we talk about denying access to the recreational community, you know, it's one thing to determine what the commercial impact is going to be, and to mitigate for that by simply making a payment to those

commercial operators. I'm sure they would much rather be fishing, but at least a payment can be made.

For recreational anglers, there is no such opportunity. And, the concerns about the expansion and placement of offshore wind are something that have not been adequately addressed with this community. We believe, as was appropriately pointed out by others, that there is much more to do here. That those who are supportive of placing offshore technologies need to make a more concerted effort to reach out to our communities to talk about the impacts, and to find mutually beneficial solutions.

We're not opposed to the concept of offshore wind and clean energy, but we are opposed to not being a part of this conversation that will have a direct impact on the recreational pursuits so many of us enjoy. Thank you for the opportunity to make comments.

MS. MURIMI: Thank you. Next, we have Alan Alward. Please state, spell your name, give your affiliation, you may begin your comment.

MR. ALWARD: Hello. My name is Alan Alward. That’s A-L-W-A-R-D. I'm Secretary of the Morro Bay Commercial Fishermen's Organization, and Co-Chair of the Alliance of Communities for Sustainable Fisheries, an umbrella group representing fishing organizations up and

down the Central Coast of California. I'm gonna try and specifically target the request for this meeting, which was to speak to the goals and what the Commission can do.

I'm going to start with floating offshore wind is still experimental, and there are unknown risks to the ocean environment. The reduction of the vital upwelling, which has been spoken to already. Also, sediment plumes from the motion of mooring chains on the bottom may impact large areas.

There are risks to the resiliency of the grid. The entire array can go offline with the transmission cable incident, which may take a long time to fix. The draping cables. Floating offshore wind has draping cables and that —— we haven't have enough time to find out what's going to happen with those. Fishermen expect whales are going to be rubbing against them picking the insulation off. There's all kinds of things like that.

I would like to see the Commission examine risks. What are the chances of a failure, and what would be the consequences? What if the whole grid ends up on the beach? In 1964, a reliable report of a Coast Guard vessel observing 120 mile an hour winds off the coast California. Are the designers designing to that level of wind event? An earthquake. An earthquake can

cause separation along the bottom cracks. The cables won't survive that. Trying to replace a broken cable underwater is going to take a long time.

I think the Commission needs to consider the downside as well as the upside. We're all on this, this bus this offshore wind bus, some of us not willingly. But we at least expect the government agency responsible for it to check and see that there are brakes.

MS. MURIMI: Please conclude your comments.

MR. ALWARD: I'm done.

MS. MURIMI: Thank you. Next, we have Maya Canonizado. Please state, spell your name, give your affiliation, you may begin your comment.

MS. CANONIZADO: My name is Maya Canonizado, spelled M-A-Y-A C-A-N-O-N-I-Z-A-D-O, and I'm with the Monterey Bay Aquarium. I'd like to thank the CEC for their work on the draft report and offer the following comment.

The Aquarium supported AB 525 and urged its passage in the legislature. AB 525 requires the CEC to evaluate and quantify the maximum feasible capacity of offshore wind to achieve reliability, ratepayer, employment, and decarbonization benefits, and establish offshore wind energy megawatt planning goals for 2030 and 2045, by no later than June 1st of 2022.

In the report, we support the CEC staff's utilization of the definition of feasible, from California Code of Regulations Title 20 section 1201 H, which defines feasible as, capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors. We, likewise, support the CEC staff recommendation, that suitable sea space for Wind Energy Areas in federal waters must be identified before the state can quantify the maximum feasible capacity of offshore wind.

The Aquarium acknowledges the significant effort involved and value of the CEC delivering on the mandate to identify suitable sea space, which includes an analysis of cultural and biological resources, with the goal of prioritizing least conflict ocean areas. We hope to offer the CEC information relevant to the least conflict seascape analysis, one that provides for protecting coastal and marine ecosystems as called for in AB 525.

The draft plan released on May 6th, provides a logical starting place for planning goals and the sea scape analysis by the Commission staff. The Aquarium does not support planning with increased goals that do not consider environmental and social values, including

cultural values, in setting those goals. Thank you to the CEC and Commissioner Vaccaro, for hosting this workshop and permitting public comment.

MS. MURIMI: Thank you. Next we have Kate Kelly. Please state, spell your name, give your affiliation, if any. You may begin your comment.

(AUDIO FEEDBACK)

Apologies, Kate. We are having trouble with your audio. Would you mind trying again?

(AUDIO FEEDBACK)

Apologies Kate. Apologies, Kate. We're having difficulty hearing you at this time.

(Pause)

(AUDIO FEEDBACK)

We'll move on to Jeremiah O'Brien. Please state, spell your name, give your affiliation, if any.

(Pause)

That's Jeremiah O'Brien.

MR. OBRIEN: Yes. Good afternoon. My name is Jeremiah O'Brien, I'm the Vice President of the Morro Bay Commercial Fishermen's Organization. And, there's been much talk about the future, and the 5 megawatts by 2030, and the 20 megawatts by 2045. And we've been involved in mitigation talks for approximately six or six and a half years now. And, I'm just concerned that,

obviously, with this, this indication of 5 to 20 by 2045, we're looking at increasing the volume of these Wind Energy Areas by about 400 percent in that time.

I'm really concerned that in taking an area like that, the food security, or the fishermen here on the West Coast is going to be severely damaged. Damaged, possibly, to the point that the infrastructure will not be able to sustain. In other words, if these areas are taken out of production, then we'll be losing jobs —— if that much area is taken out of production, we're gonna lose jobs on the beach and off the beach.

And, I'd like to see that quantified. Are we going to impact the industry to the point —— if this is our plan, to the point in the future, it might collapse. It's a very shaky infrastructure right now, and the food security in this country is as important as the power. It would be pretty tough to have an electric stove but nothing to put on it. But anyways, that's all I've got time for I guess right now. So, thank you.

MS. MURIMI: Thank you, and with that——

MR. O'BRIEN: (off mic)

MS. MURIMI: Let's take Kelly, if you can see if you can unmute again, and try and give your comment.

MS. KELLY: Good afternoon. Soundcheck please?

MS. MURIMI: Sound is perfect. Thank you, Kate.

MS. KELLY: Thank you so much. Good afternoon, this is Kate Kelly, K-A-T-E K-E-L-L-Y. I'm here on behalf of Defenders of Wildlife. Defenders of Wildlife supports responsible offshore wind development that balances renewable energy generation with the protection of wildlife and ecosystems.

We appreciate this workshop with the opportunity to provide input into the implementation of AB 525. It's essential to get offshore wind done right. Right size, right place, right timing, right cost. To do this, the planning goals must be feasible. Just because you can float it and spin it, does not make an area feasible for offshore wind.

The definition of feasibility, and the 12 factors in the report are logical, and essential to thoughtfully and effectively plan and deploy offshore wind that will meet California and the West's needs in a timely and effective manner. California needs to plan smart to address these factors. And, in particular, cultural coastal resources, fisheries, Native American and indigenous peoples, and transmission.

Chasing big numbers based on analyses that do not include full consideration of these factors will

only delay meeting our renewable energy goals and undermine a fledgling industry. Investment seeks certainty. Smart planning that considers the 12 factors and feasibility that addresses these will bring certainty. We look forward to continuing working with the Commission, agencies, and staff, and stakeholders to identify appropriate locations, strategic approaches, and a permitting roadmap to achieve responsible offshore wind.

Thank you for your time today, and that concludes my comments.

MS. MURIMI: Thank you. With that, we are at the end of our public comment period. For those who were unable to give their comments, please go to the docket for this proceeding to make comments there —— to, to submit your written comments. That has been provided in chat. And for those listening in, the docket for that —— 17 dash M-I-S-C dash 0-1.

And, I'll pass the mic to Commissioner Vaccaro for closing comments.

COMMISSIONER VACCARO: You know what, thank you, Dorothy. I think I'll first, sort of, just give the courtesy to any other principals or designees who might wish to speak. I don't know —— Jennifer, Jenn, Vice Chair Gunda, Neil —— you shook your head, but I'm

gonna say your name out loud anyhow.

MS. ECKERLE: I want to take you up on that really quickly, recognizing we've all been here for a very long time. First, just thank you to everyone who participated, and for the Energy Commission for providing a venue for this discussion. Ocean Protection Council has been really focused on how we move forward with offshore wind in the most sustainable way possible, and we heard a lot of reasons for why we need to be ambitious. And we agree. But, we are really actively working to protect ecosystem health, and fisheries, and fishermen, and the resources critical to California Native American tribes in this process.

So, we look forward to continued partnership, but we really encourage a precautionary approach to moving forward in the way that we need to meet our renewable energy goals and protect the resources of California. Thank You.

COMMISSIONER VACCARO: Yeah, and I do see you, Commissioner Rechtschaffen, so as soon as we finish up in the room, we're gonna get right over to you.

COMMISSIONER GUNDA: Thank you. This is Siva Gunda, for the record. Just wanted to say thank you to Commissioner Vaccaro for convening this, and STEP staff for this staff report, but also, kind of, this

conversation and facilitating this. So, it was a great opportunity for me to learn, good to hear all the comments, and really kind of looking at the pros and cons of thinking through this issue on the different sides. So, just wanted to say thank you to everybody. Thanks.

COMMISSIONER VACCARO: So we'll go to Commissioner Rechtschaffen, and then I will do the final-final comment.

COMMISSIONER RECHTSCHAFFEN: Thank you, Commissioner Vaccaro. We didn't anticipate —— well, maybe we should have anticipated, that we would go this long. It just shows how important this topic is, how multifaceted, and how much intense interest there is. So, thank you for convening the roundtables and the interesting discussion that followed, bringing the speakers to give us more detail about some of the academic studies that underlie our decision making, or your decision making here.

I heard a lot of things that, you know, really made me think. I like what Jana Ganion said about a top-level goal. I don't know what that means in terms of numerical goal, but I think that's where we should be going. We should be thinking about the broad opportunities and possibilities here. So, I look

forward to continuing to collaborate with you and the other state agencies on this.

COMMISSIONER VACCARO: Thank you, Commissioner Rechtschaffen. It turns out we have a couple of other principals or designees appearing virtually, but we have a hard time knowing that because their cameras aren't on. So, I believe we might still have Scott Morgan, Mark Gold, Commissioner Reynolds. I'm not sure who else, so I certainly want to open that up. Easier if you're on camera. Yeah, thank you so much. So why don't we go to Mark Gold, and then Commissioner Reynolds, and then if there's anybody else, a principal or designee who wishes to make closing comments.

MR. GOLD: Thank you, this is Mark Gold. And, and I apologize. Jen caught me off guard, I'm glad she, she had a chance to speak as well. I just wanted to remind all the viewers of —— on how we started at the beginning of this, and sort of recounting on the beginning of —— that we were able to all work together in a collaborative manner. Where the CEC really, you know, I can't commend them enough. I seem to every other meeting for their leadership, and really helping us all come together. And I think you've heard that from Jennifer Mattox as well from State Lands Commission where we work with Fish and Wildlife, on NOPC, and the

Coastal Commission to help the Commission.

And, we've all worked with the Commission on a wide variety of different issues. And for them to take that consistency determination from cradle to completion in a year, and do two of them, and meet the BOEM deadlines, I think is just beyond extraordinary, and just tells you the level of effort that went into this to really get us to this place.

I think we also heard testimony today from Kim Delfino and Mike Conroy, who represent two very large stakeholder groups that have expressed tremendous concern about what happens if floating offshore wind is not done in the manner that we've all promised to do it here as a state, which is in the most sustainable manner possible, that really minimizes impacts to fisheries, to marine life, and to tribes and cultural resources, and is basically developed in a manner that is going to really help the blue economy in an equitable fashion.

And so, those are all stated very, very high goals and the fact that, despite the numerous concerns that the fishing community has stated, and you heard a lot more of them today, there's an understanding within that community ——and I'm not saying it's unanimous —— that this is very, very important for many, many reasons for the State of California moving forward on this.

And, I think you've heard the same thing from the environmental community, the same environmental community, numerous groups here, that have expressed a wide variety of different concerns on marine spatial planning in the ocean, let alone what is probably the largest industrialization of California's coastal waters in state histories. And yet, because of the overarching need to get to 100 percent renewables, there is this understanding from those large stakeholders that we as California need to exert much greater leadership in this arena.

So, I'm just going to close with that reminder, and something you've heard all during this entire session, which is 3 gigawatts and 10 to 15 gigawatts by 2045, are indeed ambitious targets. When you look at a world that is looking at floating offshore wind, with 14 individual turbines. Not projects, turbines, with a total of, you know, less than, I think —— I can't remember if we've broken 100 megawatts yet globally, yet, of floating offshore wind. And to think that we are going to do what we do in California, which is do something innovative, do it well, but also be a global leader. Ten to 15 is an ambitious target, and I just want to make sure that we move forward in the collaborative spirit that we've had in the last year,

which has really been about the most rewarding thing that I've had the pleasure of working on in the last year in this administration, is to really watch how everybody's come together, put their individual concerns aside, and do what's best for the state of California. And, I hope we continue in that vein. Thank you.

COMMISSIONER VACCARO: Thanks, Mark. Commissioner Reynolds?

COMMISSIONER REYNOLDS: Thank you, I'll be very brief. I will just offer my thanks to the CEC for hosting this forum, as well as to all today's panelists and stakeholders who participated, and in offering such a vigorous discussion and debate. I'll look forward to continued analysis and development in this area. Thank you.

COMMISSIONER VACCARO: Thank you. I'm just asking Rhetta right now if there might be any other principals or designees on the line virtually.

All right, Scott Morgan, thanks for hanging in there with us, appreciate that you don't have any closing remarks. So, I think that leads to me. It is just shy of 3:00 P.M.. It has been an incredibly long day. So grateful and appreciative for the participants who were part of the roundtable, for the public commenters. Everything that everyone has said and

contributed matters. This helps me learn, it helps our state agency partners continue to think about what's important as we evaluate the draft report.

So, next steps are that at some point, the goal is to bring a draft report forward to an Energy Commission business meeting. July would be ideal, but best laid plans sometimes don't go quite as planned. So — but the goal is July. And, we are going to take all of this important information under consideration.

So, thank you all, public commenters participants, everyone. Special thanks to the Energy Commission's Siting, Transmission, Environmental Protection Division, Scott Flint, Rhetta deMesa, and our IT staff, and of course, Dorothy and the Public Advisor's Office for all of their support. So, thank you all so much. See you soon.

(Thereupon, the Workshop was adjourned at 3:00 p.m.)

CERTIFICATE OF REPORTER

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

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

IN WITNESS WHEREOF, I have hereunto set my hand this 18th day of July, 2022.

MARTHA L. NELSON,

CERT**367

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

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

MARTHA L. NELSON, CERT**367

July 18, 2022