U.S. COMMODITY FUTURES TRADING COMMISSION (CFTC)
ENERGY AND ENVIRONMENTAL MARKETS ADVISORY COMMITTEE
(EEMAC)

Thursday, June 3, 2021
9:00 a.m.

Videoconference
CFTC
Office of Secretariat
Three Lafayette Centre
1155 21st Street, N.W.
Washington, D.C. 20581

PRESENT:

Rostin Behnam, Acting Chairman, CFTC
Dan M. Berkovitz, Commissioner, CFTC
Brian D. Quintenz, Commissioner, CFTC
Dawn D. Stump, Commissioner, CFTC
Dena E. Wiggins, Chair, EEMAC
Abigail Knauff, Secretary, EEMAC
EEMAC Members:

1. Trabue Bland, ICE Futures U.S.
2. Rob Creamer, FIA PTG
3. Demetri Karousos, Nodal Exchange
4. William McCoy, Morgan Stanley
5. Lopa Parikh, Edison Electric Institute
6. Jackie Roberts, Public Service Commission of West Virginia
7. Derek Sammann, CME Group
8. Tyson Slocum, Public Citizen

EEMAC Associate Members:

9. Matt Agen, American Gas Association
10. Susan Bergles, Exelon Corporation
11. Jessica Bowden, Millennium Management
12. Paul Cicio, Industrial Energy Consumers of America
13. Sean Cota, National Energy & Fuels Institute
14. Daniel Dunleavy, Ingevity Corporation
15. Kate Delp, DTCC Data Repository
16. Erik Heinle, Office of the People's Counsel of the District of Columbia
17. Paul Hughes, Southern Company
18. Jeff Hume, Continental Resources
Kaiser Malik, Calpine Corporation
Dr. John Parsons, Special Government Employee
Delia Patterson, American Public Power Association
Matt Picardi, Commercial Energy Working Group
Malinda Prudencio, The Energy Authority
Dr. Richard Sandor, Environmental Financial Products
Noha Sidhom, Energy Trading Institute
Sarah Tomalty, BP Energy Company
AGENDA

PRESENTATION

Opening Remarks

Commissioner Dan M. Berkovitz

Acting Chairman Rostin Behnam

Commissioner Brian D. Quintenz

Commissioner Dawn D. Stump

Panel I: Domestic and International Cap-and-Trade Carbon Markets

Secretary Benjamin H. Grumbles, Regional Greenhouse Gas Initiative

Rajinder Sahota, California Air Resources Board

Hans Bergman, Directorate General for Climate, European Commission

Gordon Bennett, Intercontinental Exchange

Panel II: Exchange-Listed Carbon Derivative

Gordon Bennett, Intercontinental Exchange

Christian Schneider, Nodal Exchange, LLC

Derek Sammann, CME Group
AGENDA (Continued)

PRESENTATION (Continued)

Panel III: Perspectives on Carbon Derivatives and the Underlying Markets

1. Evan Ard, Evolution Markets Inc.  
2. Suzi Kerr, Environmental Defense Fund  
3. Frederick (Erik) Heinle, Office of the People's Counsel for the District of Columbia  
4. Dena Wiggins, Natural Gas Supply Association  
5. Annette L. Nazareth, Taskforce for Scaling Voluntary Carbon Markets  
6. Matthew Picardi, Commercial Energy Working Group

Panel IV: CFTC Staff Presentation on Spring 2021 Energy Market Event

1. Rahul Varma, Market Intelligence Branch, Division of Market Oversight  
2. William W. Heitner, Jr., Risk Surveillance Branch, Division of Clearing and Risk
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PROCEDINGS

MS. KNAUFF: Good morning. As the Secretary of the Energy and Environmental Markets Advisory Committee, it is my pleasure to call this meeting to order. Welcome to the first EEMAC meeting of 2021. Today also marks the sixth meeting with Commissioner Berkovitz as the Sponsor of the Committee. In light of the global response to COVID-19, we are holding today's meeting by videoconference to continue to protect the safety of agency personnel, the EEMAC Members, Associate EEMAC Members, guest panelists, and the public.

To ensure that today's virtual meeting goes as smoothly as possible and the recording of the meeting is complete and accurate, please identify yourself before you begin speaking and signal when you are done speaking, so we can continue with the next speaker or question. Please ensure that your phone and your WebEx video is unmuted before you speak and mute both once you are done speaking.

In the case that your WebEx is disconnected, please close your browser and enter WebEx again using
the link previously provided for today's meeting.

Please only turn on your camera when you're presenting or engaging in the Q&A at the end of the panel.

Panelists, please also be aware that there may be a slight time lag to switch to the next PowerPoint presentation in between panelists.

If you would like to be recognized during the discussion for a question or comment, or any technical assistance, please message me within the WebEx. I will alert EEMAC Chair Dena Wiggins that you would like to speak during the Q&A, that follows the panelists' remarks and presentation.

Before we begin this morning's discussion, I would like to turn to Commissioner Berkovitz for his opening remarks.

COMMISSIONER BERKOVITZ: Thank you, Abigail. Good morning and good afternoon to our participants in Europe today. And welcome to the Energy and Environmental Markets Advisory Committee. I'm pleased that we were able to conduct this meeting by video today and look forward to when this committee can meet in person again.
This meeting of the EEMAC will explore the potential role of carbon markets in the transition to a low-carbon economy. Reducing global carbon emissions to net zero by 2050 is a significant global undertaking.

To accomplish this goal, the International Energy Agency is calling for a transformation of how we produce, transport, and consume energy. This transformation will affect all sectors of the economy and retail customers in their daily lives.

Although decisive action is necessary to protect our environment and society, the path to net-zero emissions will have significant costs for market participants. Whether incentives, mandates, voluntary reductions, or other approaches are adopted to cut carbon emissions, financial markets can serve to more efficiently allocate the costs and risks of the transition to a low-carbon economy.

At today's meeting, we will examine the ways in which energy companies, financial firms, and other market participants are using carbon markets to meet their emissions compliance obligations and hedge risks.
associated with climate change and green lending, and how these markets might continue to evolve to meet current challenges.

The term "carbon markets" refers broadly to primary markets, secondary markets, and derivatives markets for carbon emission allowances and offsets. Primary markets are the mechanism by which allowances and offsets are initially distributed, either through direct allocation by governmental authorities, by auction, or through voluntary measures. Entities may purchase or sell these allowances or offsets in the secondary market for a variety of reasons, including to meet emission standards, speculate on price movements, or provide liquidity.

Entities that purchase allowances that meet compliance obligations can use the derivative market to hedge their exposure to potential changes in the cost of these underlying assets and discover prices over longer-term horizon. Speculators, market makers, and intermediaries may also participate in the derivatives market, as they do for other types of commodities.
In a well-functioning market system, prices in the primary, secondary, and derivative markets are related economically. While they can be an important tool to achieve climate goals, financial markets may also be negatively affected by climate change.

Last fall, the Climate Subcommittee of the CFTC's Market Risk Advisory Committee (Subcommittee) released a landmark report describing how climate change poses a major risk to the U.S. financial system and its ability to sustain the American economy.

The report details how climate change could create price shocks in a variety of asset classes, potentially disrupting the functioning of the financial markets and the underlying economy. The Subcommittee recommended a variety of actions for financial market participants and regulators to recognize and address these risks.

With respect to the CFTC in particular, the Subcommittee recommended that the agency conduct research to understand how climate-related risks could impact markets and their participants under CFTC oversight, including central counterparties, futures
commission merchants, traders, and funds.

The Subcommittee urged the CFTC to coordinate with other regulators to develop a robust ecosystem of climate-related risk management products. It further recommended that the CFTC consider expanding the CFTC's risk management rules and related quarterly risk reports -- quarterly risk exposure reports, excuse me, to cover material climate-related risks.

I commend the Subcommittee for its work in producing this report and Acting Chair Behnam for his leadership of the MRAC and on the issue of climate change generally here at our agency.

I see three principal ways in which the CFTC, as a financial market regulator, can support the transition to a carbon-neutral economy.

First, the Commission is charged with ensuring the integrity of the markets it regulates, and this includes carbon derivatives markets. This requires an understanding of how the various carbon markets interact and how companies use them to meet compliance obligations, manage risks, and discover prices.
Second, the CFTC should work with exchanges and market participants on the development of new products that will help companies meet these needs. And third, as the climate risk subcommittee recommended, the CFTC should ensure appropriate management and disclosure of climate-related risks. Market-based mechanisms, such as cap-and-trade programs, are intended to achieve climate goals at a lower cost and to direct investments to cost-effective projects and technologies for reducing emissions.

Increased investments in sustainable technologies can lead to more efficient greenhouse gas reductions, but this requires timely and transparent information, not only for current prices associated with such reductions but also for future prices. The relationship between the primary and secondary markets and the derivatives markets for carbon can drive more informed decision-making and more effective allocation of resources. The price of carbon allowances also can affect the prices of other commodities such as fossil fuels.
Given these linkages and the potential for carbon markets to meaningfully contribute to the reduction of carbon emissions, the CFTC should work with other regulators and stakeholders to optimize the effectiveness and integrity of these interrelated markets.

To that end, our first panel will examine the cap-and-trade programs in the United States, European Union, and United Kingdom, as well as lessons learned from these programs and ways in which they may evolve in the future.

We are fortunate to be joined today by Benjamin Grumbles, the Secretary of the Maryland Department of the Environment, who is here today on behalf of the Regional Greenhouse Gas Initiative, or RGGI; Rajinder Sahota, Deputy Executive Officer of Climate Change and Research for the California Air Resources Board; Hans Bergman, the Head of the Unit for ETS Policy Development and Auctioning within the European Commission's Directorate General for Climate; and Gordon Bennett, Managing Director of Utility Markets for Intercontinental Exchange, which hosts
allowance auctions for the UK Emissions Trading System.

Another way in which the CFTC can support the move to a low-carbon economy is through its mandate of promoting responsible innovation in markets and among market participants. In order to meet the goal of zero emissions by 2050, investment in renewable energy infrastructure projects must ramp up rapidly. Investors will need to manage the risks of those investments with appropriate hedging tools, including both exchange-traded and over-the-counter derivatives.

Derivatives also allow commercial entities and investors to manage exposure to changes in the price of these assets due to climate change and transition risks caused by the shift to a net-zero economy.

In addition, entities with emission compliance obligations participate in the physical markets to ensure we have appropriate allowances or offsets to meet those obligations.

As energy standards evolve, futures contracts will need to evolve to respond to changes in the physical markets. The Commission should work with
exchanges and market participants as they develop climate-related products and services to meet these needs, as well as collaborate with our domestic and international counterparts to develop consistent standards for environmental products.

Our second panel today will explore the current state of exchange-listed carbon derivative products. We will hear from Gordon Bennett of ICE; Christian Schneider, Managing Director of Strategy for Nodal Exchange; and Derek Sammann, Senior Managing Director and Global Head of Commodities at CME Group about the carbon products offered on their exchanges.

Our third panel will feature a diverse group of stakeholders who will provide their perspective on how the derivative markets operate as risk management and price discovery tools and how they expect these markets to change over time.

We welcome Evan Ard, Executive Managing Director of Evolution Markets, who will discuss the over-the-counter carbon markets. Suzi Kerr, Chief Economist of the Environmental Defense Fund, will discuss the economics of carbon pricing and
considerations for developing equitable carbon pricing policies.

Erik Heinle, Assistant People's Counsel for the Office of People's Counsel for the District of Columbia, who will share a rate-payer perspective. Annette Nazareth, Senior Counsel at Davis Polk will discuss the work of the Task Force on Scaling Voluntary Carbon Markets and its recently issued Public Consultation Report.

Dena Wiggins, President and CEO of the Natural Gas Supply Association, will talk about why NGSA views carbon pricing as the most effective long-term solution to climate change. And Matt Picardi, Vice President of Regulatory Affairs for Shell Energy North America, on behalf of the Commercial Energy Working Group, will discuss carbon market design.

A third area in which the CFTC should play a role in the transition to a low-carbon economy is with respect to the management and disclosure of climate-related risks. For example, the CFTC currently requires commodity pools and advisors to address pool performance and the risks of speculating derivatives.
The CFTC also requires certain registrants, such as swap dealers, to periodically report material risks, such as credit, market, and operational risks. The Commission should examine how climate-related risks are currently considered and reported by registrants and determine whether additional considerations of climate-related risks or disclosures are appropriate. While this aspect of risk management is not specific to the carbon markets discussion today, it is an issue that requires further exploration and one that the EEMAC could consider in a future meeting.

Our final panel of the day -- on our final panel of the day, we will hear a presentation from CFTC staff: Rahul Varma of the Market Intelligence Branch in the Division of Market Oversight, and Bill Heitner of the Risk Surveillance Branch in the Division of Clearing and Risk.

Rahul and Bill will discuss the impact on the derivatives market of the winter storm in Texas in February 2021 that caused widespread power outages and hardship for Texas consumers. I appreciate Rahul's and Bill's excellent work in preparing this presentation.
and the dedication of the CFTC staff in closely
monitoring this and other market events.

Finally, I would like to conclude by thanking
Acting Chair Behnam, Commissioner Quintenz, and
Commissioner Stump for their participation and support
in today's meeting.

I would also like to thank the EEMAC members
and our guest panelists for their contributions to this
meeting: Dena Wiggins for her dedicated service as the
EEMAC Chair, Lucy Hynes in my office for her work in
supporting this committee, and specifically, Abigail
Knauff for her exemplary service as Secretary of the
EEMAC and for always making these meetings so
informative and seamless and make them look easy.

And the fact that these meetings go smoothly
is a real testament to Abigail's and Lucy's work. I am
very much looking forward to today's meeting and to
hearing from our very distinguished panelists. With
that, I'll turn it back to Abigail. Abigail, thank
you.

MS. KNAUFF: Thank you, Commissioner
Berkovitz. And now, I recognize Acting Chairman Rostin
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ACTING CHAIRMAN BEHNAM: Thank you, Abigail, and good morning and welcome to the CFTC's Energy and Environmental Markets Advisory Committee meeting. First off, I want to thank Commissioner Berkovitz for his leadership, and extend a special thanks to Abigail, Lucy, and all of Commissioner Berkovitz' staff who serve to put together this EEMAC meeting today. Special thanks, of course, to Abigail and Dena Wiggins as well.

I also want to thank and acknowledge the EEMAC members and invited speakers, including our very own CFTC staff who will be participating on the panels today. And of course, a special thanks to all of the CFTC staff who helped us bring these meetings together. As Dan pointed out, these are very difficult to run smoothly, but they do and it's a testament to their hard work, especially in these challenging times.

As you can imagine, I am pleased and excited that today's meeting will examine how derivatives markets can facilitate the transition to a low-carbon economy and will include an update on recent events in
With panels dedicated to domestic and international cap-and-trade carbon markets, exchange-listed carbon derivatives, and exploration of the underlying market, I believe the EEMAC is taking a critical step at a time when anticipation and opportunity are building exponentially.

Financial markets, particularly the derivatives markets overseen by the CFTC, are used for hedging a myriad of risks in the traditional commodity, as well as interest rate, foreign exchange, credit, and equity markets.

They also serve as powerful information resources for hedgers and investors alike when it comes to price discovery, market transparency, and perhaps most importantly for our purposes today, facilitating the allocation of capital towards sustainable investments and to financial, agricultural, and industrial sectors as they manage the impact of physical risks in transition towards a low-carbon economy.

Inasmuch as Commissioner Berkovitz and I have
prioritized addressing the impact of climate change on
the derivatives and larger financial markets, I'd be
remiss if I did not take this opportunity to note that
this is not the first time that EEMAC examined the
promise and transition to a low-carbon economy.

And I do not do this to suggest that there is
nothing new or repetitive about today's agenda.
Rather, I'd like to take the opportunity to honor our
past CFTC Commissioner Bart Chilton.

We lost Bart a little over two years ago,
just as leaders across domestic and international
regulators and financial institutions were building the
momentum needed for the industry, public, and
policymakers to recognize that the impact of climate
change can no longer be compartmentalized as an
environmental issue.

Today's EEMAC did not come at a more
appropriate time. We are at an inflection point in the
climate discussion, and I'm confident that today's
meeting will further advance our understanding of the
critical action needed to address climate change.
Commissioner Chilton chaired the first
meeting of the expanded EEMAC in May of 2009, which featured panelists from our own Division of Market Oversight providing "An Overview of Environmental Markets: CFTC & a Carbon-Constrained World."

Even before that in 2008, Commissioner Chilton used his signature flair to deliver statements and speeches, lauding efforts by legislators, markets, and market participants to address the increasingly critical need to incorporate climate-related market risks into our financial markets and to protect our environment.

He intrigued us with titles such as, "The Start of Something Green," "It's Not Easy Being Green ..., Markets, in the U.S.," "Banquet of Consequences," "Green CAT Markets: You Gotta Show Some Guts," and one that inspires me is "The Most Important Thing."

In June of 2008, Bart asked his New York City audience, "What is the most important thing you have never done?" To avoid a cliffhanger and ever the statesman, Bart moved beyond his own life and thought about the U.S. and the world and concluded that as a nation, we have failed to address climate change.
There's now a common understanding that climate change not only presents systemic risk, sub-systemic shocks, and wide-ranging ripple effects to the U.S. financial system and larger economy. It presents opportunities as we work to ensure decisive and cohesive leadership over the markets and institutions charged with monitoring and managing risk, capital, and asset allocation, especially as the physical risks of the sudden and extreme weather events associated with climate change have an increasingly profound impact on our most vulnerable communities.

Bart would be so pleased that we have convened today almost 13 years later to take the steps needed to replace the "never" with "ever."

For my part, in support of the Commission and industry efforts, I've spent the last several years as sponsor of the CFTC's Market Risk Advisory Committee, within which is housed the Climate-Related Financial Market Risk Subcommittee. And I appreciate Commissioner Berkovitz for his recognition of their work.

Last September, the subcommittee released the
report Managing Climate Risk in the U.S. Financial System, the first of its kind ever from a U.S. government entity. I followed its release with testimony before the House Select Committee on the Climate Crisis and presentations in other venues focused on climate-related market risk and incorporating sustainability resilience into our financial systems.

More recently, in March, I announced the establishment of the Climate Risk Unit or CRU within the CFTC. The CRU will be comprised entirely of staff across our offices and divisions and will focus on the role of the derivatives markets and CFTC as a market regulator in understanding pricing and addressing climate-related risk.

To the extent that new products and market developments must accurately, uniformly, transparently, and fairly factor climate-related risks into pricing and related market function, the Commission needs to engage early in order to ensure coordination with the larger financial regulatory space, both domestically and abroad, and to provide other support as well.
The CFTC's unique mission focused on risk mitigation and price discovery puts us on the frontlines as we will increasingly need to use our wide-ranging and flexible authorities to prepare for and address the impact of climate change, and more specifically, the transition to a low-carbon economy.

And thinking about the future of the Climate Risk Unit as a resource for the Commission and the current administration's "all of government" approach, the goal is really to dedicate the resources we have -- and that includes our advisory committees -- towards raising risk management awareness and visibility within our markets and the broader economy so that we can identify where the holes are, where we need to be most vigilant in both our support and leadership as regulators.

At the heart of the EEMAC, the MRAC, the Climate Report, the CRU, all the remarks you will hear today, and the legacy of Commissioner Bart Chilton is the concept of partnerships. In speaking about climate change and financial markets and market structures, and what role policy makers should and could play.
As the remit of our new administration supports a firm commitment to full participation in the global effort, I am fully prepared for the CFTC to be an active player, partner, and leader. To that end, I am very much looking forward to the discussion.

And I want to end these remarks by again, thanking Commissioner Berkovitz, Abigail Knauff, Dena Wiggins, and the esteemed members and guests of the EEMAC. I look forward to today's discussion. Thank you.

MS. KNAUFF: Thank you Acting Chairman Behnam. I now recognize Commissioner Quintenz to give his opening remarks.

COMMISSIONER QUINTENZ: Thank you, Abigail, and thank you to you for your leadership, staff level, and to Lucy and, of course, to Commissioner Berkovitz for organizing today's meeting.

Being such a thoughtful leader of this advisory committee over the last number of years, I've always found these discussions, and all the advisory committees, to be incredibly informative and fruitful and productive in providing me and the agency with just
a lot of wisdom and experience in such an esteemed
group of members.

And I'd like to thank the members for
attending today, Dena Wiggins, of course, for your
leadership. These are very important issues that we'll
be hearing about today.

The derivatives market is going to play an
absolutely critical role in managing the financial
risks associated with climate change as well as
potential transition risks and impacts from policy
decisions.

And I've always thought that the impact of
commerce on the environment has -- is captured through
traditional economic, classical economic theory, and
the free rider problem, which poses that if an access
or use of a good can be done so without cost, then that
good could potentially be overused, underproduced, or
degraded.

And the economic solution to a free rider
problem is to not make it free, which is why I think a
cap-and-trade approach has always had some merit to it.

And I'm thrilled that we're going to be hearing about
the experience of some jurisdictions in trying to
implement that.

Of course, government-created markets need to
be done very carefully and need to be done very
thoughtfully. I think we can all look at the rent
market to understand the benefits and the risks of
government-created markets and hopefully learn from all
of those examples.

And I'm thrilled to hear from the rest of the
participants around the approach the derivatives
markets are currently taking and can take in the future
to -- with innovative products in the traditional
capitalist economic framework in the United States to
continue to address these issues.

So, thanks again to Commissioner Berkovitz.

Thank you, Abigail and Lucy and Dena, and appreciate
all the membership, your participation, and for the
thoughtful presentations and the work that went in
today. Thank you.

MS. KNAUFF: Thank you Commissioner Quintenz.

I now recognize Commissioner Stump to give her opening
remarks.
COMMISSIONER STUMP: Thank you, Abigail, and thanks, Commissioner Berkovitz, for holding the meeting. And thanks to Dena for facilitating and for her leadership of the EEMAC. I think most -- everything has been said at this point, so I'll be very, very brief.

I think the CFTC often is not overlooked, but I think the public doesn't always recognize the enormous role we play in so many different markets and the folks that we regulate play and so -- in facilitating well-functioning markets.

And I think this is another example of like many markets we regulate, oftentimes, the investor demand drives the market. And oftentimes, the risk mitigation is driving the market. And so, in this case, I think it's worth pointing out that some investors may be focusing on the impact of climate change itself, while others really need these risk mitigation tools.

And the policies to address climate change may have a huge impact on their businesses that they need to operate and that we all depend upon; for
example, the creation of stranded assets, generating large changes in the asset prices, and the credit risks that may be follow-on effects of various climate-related policies.

And so regardless of what or who creates that momentum, and my own personal views on the preferred emphasis, I think the role of the CFTC remains to preserve the functioning of the consequent risk mitigation tools.

And so, whether that's driven by government mandates, as it has been in other jurisdictions, or if the consumer or market demand creates new risks, then I think the derivatives will be used to manage that risk, just as they are in many other markets that we regulate.

And I'm so pleased that Commissioner Berkovitz has provided the opportunity today to highlight those derivative products that we already regulate. I think it's worth pointing out we already regulate over 100 products that have a carbon-related component to them. And I think perhaps that's not well understood or publicized.
And so, I'm very pleased that we have the opportunity today to hear from those who have facilitated the development of those markets. And I'm also interested to hear more about the development of the primary markets that Commissioner Berkovitz mentioned because the CFTC has a keen interest in the manner in which those markets develop to recognize as input in the various voluntary endeavors already underway.

These are important considerations for the development of our markets, the derivatives markets. In order for them to be well-functioning, we need to have a good grasp on what the inputs into those underlying cash markets are.

So, I'm very pleased that we're having a meeting. I look forward to all of the presentations and appreciate all of the work that has gone into preparing for the meeting. Thank you.

MS. KNAUFF: Thank you, Commissioner Stump.

I'm going to turn the meeting over to Dena now.

CHAIR WIGGINS: Thank you, Abigail.

Commissioner Berkovitz, Mr. Chairman, Commissioner
Quintenz, and Commissioner Stump, I'm very honored to be a member of this body, the EEMAC, and to continue to serving as the Chair.

The Committee serves an important vehicle to discuss matters of concern to hedgers, consumers, exchanges, firms, end users within our energy and environmental markets, as well as the Commission's regulation of these markets.

Today's meeting serves as a timely opportunity to discuss carbon markets and pricing. This is a topic that's near and dear to our hearts, at the Natural Gas Supply Association. I very much appreciate the fact that Commissioner Berkovitz has allowed, as the Sponsor of this Committee, to focus our attention today on these important topics.

I look forward to learning more from my colleagues as the day continues, and as we hear from all of the interesting panelists we have coming up. And as Chair, I also look forward to facilitating the discussion of the Associate Members' perspective of the EEMAC and working with the EEMAC members to provide the Commission with feedback and recommendations that
assist the agency and its oversight of our markets.

To ensure that today's discussion is consistent with the EEMAC charter, which prohibits Associate Members from providing reports and recommendations directly to the Commission, we will first take questions and comments from the EEMAC Associate Members after the panelists have made their presentations and prepared remarks on the respective panels. And then we will turn to the EEMAC Members for their questions and comments on the panelists' presentations, prepared remarks, and any feedback provided by the Associate Members.

As Abigail mentioned earlier, please use the chat function to alert her if you have a question or a comment, and we will recognize you as a speaker after receiving your notification.

Before we begin our first panel, we would like to do a roll call of the Members, Associate Members, and guest panelists so that we have your attendance on the record. And Abigail will lead the roll call.

(Brief Pause.)
COMMISSIONER BERKOVITZ: Abigail, I think your muted.

MS. KNAUFF: EEMAC Members, after I say your name and organization, please indicate that you're present. Please make sure your phone is not muted. If you we were unable to hear your response, please send me a message via the WebEx chat to confirm that you are present on today's call so that I can correct the record.

Trabue Bland, ICE Futures U.S.?
(No response.)

MS. KNAUFF: Rob Creamer, FIA PTG?

MR. CREAMER: Present.

MS. KNAUFF: Thank you, Rob.

Demetri Karousos, Nodal Exchange?
(No response.)

MS. KNAUFF: William McCoy, Morgan Stanley?

MR. McCoy: Present.

MS. KNAUFF: Thank you, Bill.

Lopa Parikh, Edison Electric Institute?

MS. PARIKH: Present.

MS. KNAUFF: Thank you, Lopa.
1 Jackie Roberts, Public Service Commission of West Virginia?
2 (No response.)
3 MS. KNAUFF: Derek Sammann, CME Group?
4 MR. SAMMANN: Present.
5 MS. KNAUFF: Thank you, Derek.
6 Tyson Slocum, Public Citizen?
7 (No response.)
8 MS. KNAUFF: Now, we're going to turn to the EEMAC Associate Members. After I say your name, please indicate that you are present.
9 Matt Agen, American Gas Association?
10 MR. AGEN: Present.
11 MS. KNAUFF: Thank you, Matt.
12 Susan Bergles, Exelon Corporation?
13 (No response.)
14 MS. KNAUFF: Jessica Bowden, Millennium Management?
15 MS. BOWDEN: Present.
16 MS. KNAUFF: Thank you, Jessica.
17 Paul Cicio, Industrial Energy Consumers of America?
MR. CICIO: Present.

MS. KNAUFF: Thank you, Paul.

Sean Cota, National Energy & Fuels Institute?
(No response.)

MS. KNAUFF: Daniel Dunleavy, Ingevity Corporation?
(No response.)

MS. KNAUFF: Kate Delp, DTCC Data Repository?

MS. DELP: Present.

MS. KNAUFF: Thanks, Kate.

Erik Heinle, Office of the People's Counsel of the District of Columbia?

MR. HEINLE: Present and good morning.

MS. KNAUFF: Thank you, Erik.

Paul Hughes, Southern Company?
(No response.)

MS. KNAUFF: Jeff Hume, Continental Resources?

MR. HUME: Present.

MS. KNAUFF: Thank you, Jeff.

Kaiser Malik, Calpine Corporation?

MR. MALIK: Present.
MS. KNAUFF: Thank you, Kaiser.

Dr. John Parsons, Special Government Employee?

DR. PARSONS: Present.

MS. KNAUFF: Thank you.

Delia Patterson, American Public Power Association?

(No response.)

MS. KNAUFF: Matt Picardi, Commercial Energy Working Group?

MR. PICARDI: Present.

MS. KNAUFF: Thank you, Matt.

Sarah Tomalty, BP Energy Company?

MS. TOMALTY: Present.

MS. KNAUFF: Thank you, Sarah.

Malinda Prudencio, The Energy Authority?

MS. PRUDENCIO: Present.

MS. KNAUFF: Thank you, Malinda.

Dr. Richard Sandor, Environmental Financial Products?

DR. SANDOR: Present.

MS. KNAUFF: Thank you, Dr. Sandor.
Noha Sidhom, Energy Trading Institute?

MS. SIDHOM: Present.

MS. KNAUFF: Thank you, Noha. Thank you.

I will now turn the meeting back over to Dena.

CHAIR WIGGINS: Thank you, Abigail. Our first panel today will discuss domestic and international cap-and-trade markets. We will hear prepared remarks from Secretary Grumbles speaking on behalf of the Regional Greenhouse Gas Initiative; Rajinder Sahota, California Air Resources Board; Hans Bergman, the European Commission; Gordon Bennett, ICE.

And I think with that, we are ready to begin. Secretary Grumbles, please go ahead.


CHAIR WIGGINS: Yes, we can. Thank you.

SECRETARY GRUMBLES: Thank you so much. This is an honor to be part of this discussion. And I will -- I have some slides to go through. But in deference to my esteemed panel members, I will try to be quick and give you a broad overview.
I just -- I want to state at the outset, as the PowerPoint slides are brought up for you to look at, that RGGI -- we call it RGGI, the Regional Greenhouse Gas Initiative -- has an Executive Director as part of RGGI Inc., and his name is Andrew McKeon. And his staff report to me and other members of the board that oversees the actual initiative, which is not a single program. It's essentially 11 programs within each of the 11 states that participate in this Regional Greenhouse Gas Initiative.

So, Abigail and all Commission members, when we have follow-up discussions getting into the derivatives and other aspects, Andrew is a great resource. And I am excited and honored to be part of this discussion.

If you go to the next slide, please. So, a little bit more, if you'll bear with me on what RGGI is and what it is not, RGGI-11 means currently 11 states participate in the effort that puts a price on carbon.

And what could be more important right now than a carbon-driven, citizen-centered, market-based approach to deal with this growing threat of carbon
pollution and climate change? This collaborative, this partnership of states, as you can see, covers enormous political and geographic diversity and a large chunk of the economy and population for the United States.

And the RGGI program is based on each -- the political leadership in each state, committing not to be part of it, of an interstate compact, but a partnership where each state has legally enforceable commitments on the regulated entities within its state. And policy is driven by the environmental secretary and the energy or economic secretary of each of the states. So, each state has energy and the environment at the helm, shaping policy and future directions.

Next slide, please. This is, as you would expect, it is focused on the power sector, coal-fired and natural gas-fired power plants of 25 or greater megawatts, although New York showing flexibility that the RGGI effort has. New York has agreed to modify theirs to 15 or greater megawatts facilities.

The state -- each of the states allocate the allowance. We do not give them away. We allocate the proper number based on the amount of emissions coming
from the coal-fired or natural gas facilities covered in our programs.

And then the regulated entities have quarterly auctions and the secondary market to ensure that at the end of the three-year control period, they are held accountable and have the proper number of allowances. They are fungible, bankable, tradable.

Each state respects the efforts of the other state as part of this. That's what makes them fungible.

My real focus as the Vice Chairman of RGGI is to ensure that our cap-and-trade program, which we really call a cap-and-invest program -- and it's "invest" because we also want to emphasize the investment part of it, how the proceeds are utilized by each of the states.

But the key for us in this environmental program is to ensure that the regional cap is stringent enough to produce real environmental results. So, we modify the cap over time. Currently, it's 119.8 million tons.

It gets adjusted through a bank adjustment and when we have our periodic revisiting of the
stringency of the cap, and the auction proceeds are
reinvested. And I'll tell you a little bit more about
that.

Next slide, please. So, the bumper sticker
slogan for RGGI is that over the last 13 years, this
tracks over the last decade, we have slashed our
greenhouse gas emissions in half and have enjoyed
steady and continued GDP, economic progress, decoupling
GDP and environmental leadership so that we can have
both.

Next slide, please. This is just to give you
a somewhat colored perspective of the energy sector and
the trends. And I would just simply spend less than 30
seconds on this to say if you look at the gray, you can
see that natural gas is increasing but not
dramatically, not as fast as the coal sector at the
bottom is decreasing.

The state of Maryland, which has three coal-
fired power plants, when I started as environment
Secretary under Governor Larry Hogan, we had eight. We
now have basically four, but it will be three by later
this year. And before 2030, we will not have the coal-
fired power plants. We will -- they will be run in
either as partly as natural gas or embracing
renewables. But this is a picture of the energy
generation trends.

Next slide, please. One of the success
stories and the recipes for continued success, what I
believe is not only the first cap-and-trade program,
but the most successful in the U.S., I think other
panelists may dispute that. But we have regular,
comprehensive, entirely bipartisan and professional
review of cap stringency and other safeguards.

This program has tremendous degree of public
transparency and scrutiny and engagement on how to set
the cap, at what levels to set the cap, what safeguards
should be included to reduce the risk of sticker shock
or dramatic changes in the price of electricity, which
we have not seen based on the very safeguards we have.

And 2017 was a critical moment in the history
of the program where we, on a completely bipartisan
basis among the United States at the time, agreed to
reduce our cap by 30 percent by 2030 and adopt --
I hope you get a chance to get into this more
and more detail later, but the -- we've always had a
cost containment reserve to ensure that the cost of the
allowances in the market in the auction do not go above
a certain level. Right now, the cost containment
reserve, the dollar level is $13.

And now we added an emissions containment
reserve, so that if there were too many allowances in
the market and the price was getting too low for the
allowances, we would take away some of those allowances
and put them in the environmentally-driven containment
reserve.

And we look forward to an additional program
review and cap adjustment, getting in earnest on that
next year in the spring.

Next slide, please. We have quarterly
auctions -- in fact, today. Yesterday, today, we are
in the process of completing our 52nd quarterly
auction. Every one has been successful -- integrity,
accountability, progress on reducing greenhouse gas
emissions, and increasing proceeds for investment by
the states in clean energy and in other public
interest.
You see the prices can vary over time. We are enjoying, as expected, a continued boost in the price -- the clearing price for the allowances in the market. And tomorrow, we will disclose publicly what the results of the 52nd auction are. $3.9 billion in proceeds, which are invested among the states, based on the percentage of regulated entities in each of the states.

And we have a tracking system, which is also one of the key recipes for success to ensure a RGGI COAT stands for Regional Greenhouse Gas Initiative Carbon Dioxide Allowance Tracking System. And that helps us ensure that there's no funny business, that there's no -- nothing going on that would put at risk our market base and steady performing approach to reducing greenhouse gas emissions.

The secondary market is robust. It's an additional component that provides great flexibility so that the market continues to trade between these quarterly auctions.

Next slide. Only a couple more. A little more detail on the auction structure itself. You can
read on the PowerPoint, and for those of you who are listening, the platform is that it's electronic, internet-based. We focus on the integrity of the process.

We have an independent market monitor contractor who is currently Potomac Economics. And it's through an awards process, the bids ranked by price high to low. That's the structure.

Next slide, please. There's always -- there was a reserve price, a hard price floor, which is very low, a couple dollars. We do not set -- the governmental entities that run our RGGI efforts do not set the price. The market sets the price, the auctions and the secondary market.

But we do have two very important mechanisms, as I mentioned, that the cost containment reserve is to make sure that prices are not -- that the clearing price, the cost of the allowance in the marketplace is not unacceptably high. Rarely has that been used.

We also have this new emissions containment reserve to make sure that we don't have too many -- that the price isn't too low, which would reduce the
stringency of our environmental success. And that
would -- but this is the first year where that is in
place, and that dollar amount has not been triggered
yet for taking the allowances away from the
marketplace.

Next slide, please. Here's a little busy. I
apologize for that, but it shows you that the clearing
price is on an upward tick, and we're encouraged by
that. And one of the most important points to make
about the auction and the success of the RGGI program
is that it is growing in terms of the number of states
that are participating in RGGI.

Last year, Virginia -- the Commonwealth of
Virginia joined. They participated in the January 2021
auction for the first time. That's a huge increase in
the size of RGGI. The year before, New Jersey rejoined
the program.

Right now, we're in discussions with,
providing technical information to the Commonwealth of
Pennsylvania, which is in the process of attempting to
join RGGI. They have been working on this through
regulations over the last year and a half. They are
heavily engaged with the legislature, and Governor Wolf is pushing hard. But if they are successful in joining RGGI, that will increase the number of allowances that recovered emissions in the -- within the PJM power grid by 60 to 80 percent, a huge game changer by adding Pennsylvania.

And North Carolina continues to show interest in joining the RGGI program as well.

Next slide. We have an independent market monitor to ensure that integrity is maintained and that public transparency and accountability are provided as well. That is contracted out, and we're proud of that note and realize that is a very important component to the success of the RGGI program.

Next slide. And this is just a little bit more for your reading enjoyment on our tracking system for the emissions themselves. This is a very important -- a very important database for each of the state and its governors and the environment and the energy secretaries when we revisit the size of the cap and other program reviews. It's using this information. How many allowances are there? How much progress --
how much more progress do we need to make in reducing
greenhouse gas emissions?

Next slide. This just shows that
particularly since political elected leaders oversee --
the governors oversee their state's participation in
the RGGI program, this is such a critically important
component of the basic -- there's a lot of green --
there's a lot of green in the investments and the types
of projects that benefit energy efficiency, clean
energy, renewable energy.

The State of Maryland, the legislature, has
chosen that about 50 percent of the annual proceeds
should go towards direct bill assistance to help on the
affordability issue as well as reliability and
resilience.

Last slide, I believe. Yeah. I just wanted
to say that approximately 3 billion and a bit by an
independent review group estimated for the RGGI program
over the last decade based on the investments in energy
efficiency, clean energy jobs.

Look forward to answering any questions you
might have. Thank you again for the opportunity to
address you this morning.

CHAIR WIGGINS: Thank you very much. Our next speaker, Rajinder?

MS. SAHOTA: Good morning, Commissioners, everyone. I just want to thank Commissioner Berkovitz for the invitation to be here today. It's been a long time since we've actually had a conversation with CFTC. We had a four-year break for a while. So, it's nice to reconnect with colleagues and reestablish that relationship.

Next slide, please. Next slide. Great. So, California has made significant progress in reducing its GHG emissions. Our per capita and per GDP emissions have been declining, and we actually met our 2020 target four years earlier than mandated by law, but we have to return to 1990 levels by 2020. We actually fell below 1990 levels in 2016 and have remained under that limit.

It's important to know what emissions we cover in the program, and the pie chart shows our fossil energy and industrial inventory. We are a huge importer of power, and so we also claim the emissions
associated with the power that serves the state. And
as with most jurisdictions, transportation is the
leading source of GHG emissions.

What else is important on that slide is that
80 percent of everything in that slide is covered by
the cap-and-trade program. So, we have a high bar for
what can be quantified and priced under a carbon
pricing mechanism. Hard-to-quantify emissions, such as
fugitives, are not regulated by the cap-and-trade
program and left to direct regulation.

Next slide. As with most cap-and-trade
programs, we have the same features. We have a
decending set of caps. And we have a steadily
increasing price signal through a full pricing auction.
And the market targets the lowest cost reductions
across the entire economy. It doesn't matter where
those reductions occur for GHG because they are a
global pollutant, not like a local air pollutant.

And all of this creates a long-term price
signal for investment certainty. So not only is the
design of the program important, but also the political
support. We have had strong political support through
bipartisan actions by our legislature and under both Republican and Democratic governors in the state. Each entity covered by the program has a compliance obligation that is set by GHG emissions, and entities are required to meet that compliance obligation by surrendering allowances or a limited quantity of offsets equal to that compliance obligation.

We create all the allowances in the system. We issue offsets based on strict criteria for what qualifies as an offset. And over time, the cap declines, and I have a graphic about that. So, auction mechanism is very important. It helps to establish that steadily increasing price signal and transparency across the economy.

The cap-and-trade program is not a program in isolation to California. It's one of the policies under our portfolio approach to addressing climate change. So, we do have other programs. Some of those other programs target the same sectors under the cap-and-trade program. But together, they have shown the success of reducing emissions towards their target.
And many of our programs that are in the portfolio are also leveraged for air quality targets under the federal programs and the state-level program. But things that target transportation, fossil combustion are going to deliver both air quality and GHG reductions in the economy.

Next slide, please. This slide provides some facts about the program. It is economy-wide but does cover transportation, industry, electricity, import electricity, and again 80 percent of the state's emissions. We cover large emitters, stationary sources over 25,000.

There have been high compliance rates with the program, 100 percent or near 100 percent over the last decade. And over the last decade, we've also raised 14 billion that has been invested back into actions through these GHGs in California, with more than 50 percent of those investments going directly to benefit the most impacted communities and most heavily burdened communities by air pollution in the state. And so, we do see the auction revenue as a key part of helping with our vulnerable communities.
Next slide, please. This graphic shows the cap in the program. The program started in 2013. However, it wasn't until 2015 when natural gas and transportation fuels were brought under the program. And when we bought in natural gas for residential, commercial, and we bought in transportation fuels, it doubled the size of the program. But even before those had a compliance obligation, we had allowed those entities to participate in auctions so that they could also start planning and hedging for the compliance obligation when they would eventually be in the program.

What you see in the shaded parts of the bars is how we distribute those allowances over time. The dark box at the top of the bars are the allowances we take out for the price containment reserves. The yellow is what we put towards our industrial allocations to minimize leakage, and it's an estimate in this graphic.

We do have a green portion that is allocated directly to our natural gas and electricity utilities, and that's to benefit and protect ratepayers. And that
blue portion that you see there is what goes to auction. So, it's about 45 to 50 percent of the allowances in any given year that are going to auction. Between 2021 and 2030, the caps decline at four percent per year, and that is to reflect our 2030 target of a 40 percent reduction from 1990 levels by 2030.

Next slide, please. It's important to know where this allowance value is going. Like I said, our electric and natural gas utilities do get allowances that are auctioned alongside the allowances that the state auctions. That money is returned back to the utilities. They can use it for rebate programs for efficient appliances, update for solar panels installation programs for homes.

And importantly, there is a biannual climate credit on bills that repairs get in the state of California. When the pandemic hit last year, that biannual return was split over two months, to help on two months of bills instead of just one month because we did see the impact of job losses on the shelter-in-place.
And so that was one way that we could help mitigate bills in the state of California. And again, 50 percent of the money is going directly back into communities.

Next slide, please. The program is designed with a series of mechanisms for compliance flexibility. There are a limited amount of allowances that are issued under the caps in the regulation. We do also issue offset credits under very specific protocols that we have adopted.

Because the offset credits are subject to a four percent usage limit, there is an infinite amount of offsets that we can issue. We just limit what can be used by any individual entity in the program. There are banking limits which are withholding limits that change each year depending on the size of the overall cap of the program.

And there are multi-year compliance periods to help with any annual variability related to hydro, crops, agriculture, et cetera, in the state of California, and things like an economic downturn and a short-term downturn.
Next slide, please. So how does the program work? We have a regulation that actually collects the data, which is verified by a third party, and those accredited third-party entities are subject to oversight and enforcement by us. We do believe that that data is critical to the fundamental strength of the program, and it's essentially setting caps and establishing compliance obligations.

And so, on our mandatory reporting regulation, we have very high fines that work as deterrents in this reporting or missing your reporting requirements. We have reporting on emissions, production, electricity, sales and purchases, among other data. And everything is reported at the facility level based on electricity imports that are delivered by sources in the state of California.

Some emissions, for example, biogenic emissions, are recorded but do not have a compliance obligation. So, we're really talking about the fossil-based emissions. And then one allowance equals one offset credit equals a permit to emit one metric ton of carbon dioxide equivalents.
Next slide, please. We do have mechanisms specifically designed to ensure market integrity. This includes, again, purchase limits at auctions for allowances, holding limits for entities that can purchase and hold those allowances, registration and disclosure requirements so that we know who's in the market and if they're related to other players in the market.

And if there is a certain level of shared control between entities in the market, they do share those purchasing holding limits. We have a central tracking system called KIT, and there are serious financial penalties for violations for regulatory requirements.

It's also worth mentioning that not only do we have the regulated entities in the program, but we also have voluntary participants. So, we can have hedging funds, and we can have banks and brokers participate in the program. And they all have to disclose a similar amount of detail and information about their organization.

We have seen some relationship with FERC and
CFTC in the past. We had a fair amount of engagement with our colleagues at the federal level at the early stages of designing the program. There was that period of lapse, and we're happy to start to reengage with those agencies and with the CFTC in particular.

We have enforcement abilities within the agency, but we also coordinate with our Department of Justice. And in writing the regulation, we were very closely working with our Department of Justice restructuring things related to fuels and energy.

Next slide, please. There is a mechanism that has been part of the program since the very beginning, and what this mechanism does is ratchet out allowances if there's low demand at any given auction.

And so, if we have an auction where not all the allowances sell, those allowances are removed and no longer brought back to auction, and so we have two consecutive auctions that clear above the auction reserve price. And that reserve price is going up five percent plus inflation each year. And it's usually about six to seven percent.

Previously unsold allowances are slowly
returned to the market. If that demand returns at the auction, the maximum number of unsold allowances that can come back is about 25 percent of what is offered in total, so that we just don't put a glut of allowances back into the market.

And then allowances that remain unsold for 24 months are permanently removed and placed into our price containment reserve. This mechanism has removed 40 million allowances in the program so far.

So, it has been shown to work and has been triggered during 2016 and '17 when we had a period of political uncertainty. But once that political uncertainty was settled through new legislation, with bipartisan support, we saw that folks become more confident in the longevity of the market and continue to reinvest back into the market.

Next slide, please. There are a fair amount of secondary market activities that we track or engage in. We do have our own dedicated market monitoring section that provides direct program oversight. We also have an independent market monitor that performs analyses of the auctions similar to what RGGI has. We
have data that we get from the commodity exchanges that we look at for price transparency.

And I'll show a graph in a little bit. That helps -- that will explain that a little bit further.

We have access to reporting services. And then we have a fair amount of detail that must be put into the system when you under -- when you actually engage in a trade of instruments between accounts in our system.

And that includes the number and types of instruments, the agreement date, the price paid, currency type. And at any time, we can call in all contracts related to any transfer within the system.

We have used that mechanism to better understand things that didn't look quite what we're expecting to see, and it has resulted in some enforcement actions levied within the program.

We also put up quarterly and annual market transfer reports. So that we, in addition to the secondary market report, are providing some information on what we're seeing on prices and transfers.

Next slide, please. So, this graphic shows a couple of things. What you have there in the gray line
is the auction reserve price, and then the green triangles indicate the clearing prices that are auctioned, and then that blue line is the secondary market prices. The green diamonds never go below the full price of the gray lines because we do not sell allowances under that reserve price at any auction.

But we have seen periods where the secondary market prices did fall just below the reserve price of the year in our program. I mentioned some political uncertainty in '16 and '17, so that's where you see that initial few periods where the blue line, the secondary market is below auction reserve price.

And then most notably is early or spring of 2020 when we saw all financial markets start to see huge sell-off, and that also impacted our market, not in the sense that our prices at the auctions dropped but that interest in the auctions dropped because people in the secondary markets were liquidating allowances that they were holding.

And so, going into any given auction, we will look at this data to understand if we're seeing patterns that could give some indication of what to
expect at an auction. We never share that as the administrator of the market, but it is something that we look at. And we know that it's a product available to some of the entities out there by third-party providers.

Next slide, please. And then finally, I do want to flag that, you know, we are linked with Quebec carbon market. In order to be linked with the market, we have the same market rules, including the unsold allowance mechanism. We have mutual recognition of each other's issued allowances and offsets. And there are no limits on the origin of compliance instruments used for compliance.

And in fact, if you're a market participant, you can't tell whether you're trading a Quebec or California allowances in the system. All of this program is helped administered through the Western Climate Initiative, Inc. It is a nonprofit, and it provides the administrative services to run the linked programs. That includes the single registry system, the same auction platform, and market monitor services.

We have been linked with Quebec since 2013,
and we've had linked auctions with them since that time
as well. We were linked with Ontario, Canada, for a
little bit, but then they had a change in provincial
government. And they were in for about a year and then
out for about a year.

But what was really telling about the design
of the California-Quebec market is we've weathered
that. We didn't see pronounced changes in prices or
mass exiting of the market, and that really helped to
show the resiliency of the design of the program to
weather those kinds of actions.

And the next slide, please. Some additional
resources if you want to read up more on our program.
And I look forward to the conversations with the
Commissioners after all the panelists are completed.
And thank you to the CFTC staff for helping to manage
the logistics for today. Thank you.

CHAIR WIGGINS: Thank you very much. We'll
turn this over now to Hans and Gordon.

MR. BERGMAN: Okay, hello. So, I'll start.
And you hear me, I hope? Okay.

CHAIR WIGGINS: Yes.
MR. BERGMAN: So, if I can get my slides.
First of all, thanks a lot to -- for welcoming us from Europe to participate at your event. It's very positive that we have these increased exchanges across the Atlantic and especially in this important area of climate change.

So, I will speak a bit about the system as it is, and then I will speak a bit -- with slides. And then I will speak a bit without slides on -- a little bit more on this financial aspect.

So, if I can have the next slide, please.

First, a few words about Europe because maybe some of you don't exactly know how it works. So European Union has 27 member states. It's around 450 million people, and we were -- we are working together to have free trade, free movement of people and labor, et cetera. And we have a lot of common legislation in a large number of areas, and our laws are normally called directives and regulations.

The European Commission where I work, which is often called the Commission, is the executive branch. So, we propose legislation, and then we have
two co-legislators, which is the European Parliament and the Council, we call it, which is the sort of group of the national governments of the 27 member states. And when the two agree on the legislation, it's our job to implement it.

Next slide, please. So, in this European Commission, we have many departments. We have one on climate change, and that's where I work, the EU ETS. So, the EU climate policy has been around since now about 20 years. So, we have currently a target -- a common EU target to reduce emissions by 55 percent compared to 1990.

This is a very new target, only a few months old. And current legislation is based on a 40 percent reduction. So, we are currently right now very actively working on preparing new legislation to step up these 15 percentage points in this 10-year period that already started. So, it's quite a challenge both work-wise and fund-wise.

We have divided the carbon emissions into two groups basically. They're half and half each, and both are capped basically by economic instruments. And the
one group, which I talk about mainly, is large sources, the power plants, and the big industry. It's covered with one common cap for the whole of EU, which would decline over time. And that's the EU ETS, Emissions Trading System.

And then all other emissions, which is capped member state by member state. And there's quite a big difference in reduction targets depending if they are richer or poorer member states. But also, there is limits on allowances on the member state countries between each other if one overachieves and another underachieves.

Next slide, please. So, EU ETS was put into place in 2005. First there was an attempt to set out the EU carbon tax, but it didn't work, so then we went to the cap-and-trade emissions trading. And it applies to around 11,000 installations, as I said, mainly the power sector and heavy industry. It has covered the EU 27 member states plus three more countries. It's Norway, Iceland, and Liechtenstein, which are part of the European economic area.

So, it's now around 40 percent of the EU
emissions. It was more than 50 percent when we started, but the emissions have gone down faster in our emission in the ETS area than the other areas which is road transport and building heating emissions, which is more difficult to reduce.

So, like the other colleague said (indiscernible 01:12:17), on the one hand it cuts emission and set a declining trajectory to ensure that they meet our climate targets in a cost-effective manner, but efficiency is very important, and it sets carbon price to incentivize low-carbon investments.

So, they have now arranged a fourth phase. The first phase was three years but more of a test phase, which when it ended, the allowances were worthless. But since 2008, the allowances are a kind of a permanent currency, which can be banked into the future system. And this has created stability but also some problems because we have to had the economic crisis, for example, in 2009, where it led to some concerns. I will come back to that. But we have since January this year embarked on phase four of the EU ETS.

Next slide, please. So, like it was also
mentioned by our previous speakers around -- the ETS generates a lot of revenues, and they have now in the order of 50 billion U.S. dollars generated since 2012. And when we see the price we will understand why the large chunk of this amount comes now in the last few years. So last year, we were over €17 billion only in one year.

And member states use around 70 percent of this revenue to tackle climate change, and it's also used to finance innovation. And another thing, which is perhaps more specifically EU than US, is that we also have -- seem to have one common system for the whole EU despite the very big difference in, let's say, GDP per capita between the richer-income member states and the lower-income member states.

It's quite an important solidarity element where part of the revenues are transferred from the richer member states to the poorer. We also have quite large special funds to support modernization of the -- main energy sector in the low-income member states, which often also are more dependent on coal. And we all know their histories, that they're having more
issues to deal with.

Next slide, please. So, a little bit more in detail. So, one ton of CO₂ is one allowance. And then we have them of course the amount of allowances to be issued every year is fixed in legislation. It's one of the most important things that the legislators decide.

It was rather rigid in the beginning, but since -- and that created some problems. For example, the economic crisis, when the supply was kind of fixed, but the demand went down very fast.

But in 2019, we have a new instrument in place, which we call the market stability reserve, which basically removes allowances from auctioning until we reach a better balance in the market. And it can also work the other way around. If there's a shortage of allowances in the system, it can grow from reserving out in the market.

We have most of the allowances sold on daily auctions. So, in fact, we have all different products, they have them very frequently, basically every day, on the platform EEX, and the revenues are provided to the member states. So, like a typical day generates around
180 million U.S. dollars, so quite a lot of money.

Then another around 43 percent of allowances are allocated for free to the energy-intensive industries to handle their competitiveness issues. But there is a system where only the most efficient facilities get what they need, more or less. And if you're (indiscernible 01:16:13), for example, you only get half of the allowances you need. So, it's a system that favors the most efficient installations in terms of greenhouse gas efficiency.

And the power producers receive no free allocation. So, they are the big buyers on the auctions.

Next slide, please. And it is imperative that they can pass on the cost to their consumers because then there's international competition. So, our compliance system is that by the end of March every year, each facility operator has to report emissions, which of course have to be verified.

And then by the end of April, one month later, this is around the time they have to surrender the amount of allowances equivalent to emissions. And
we have very high fines for noncompliance. So, we have a compliance rate of about 99 percent. So, the instrument is very, very well followed.

Next, please. So here, it's basically showing the cap between the (indiscernible 01:17:13) the cap as it has been decided. In 2014, '15, '16, we did some temporary reductions of the auctioning because we had a big surplus. And then also that yellow part, that never came to the market. And again, from 2019, they have this amount in yellow which never came to the market although that was originally intended, and this is this new market stability reserve.

And you can see it has quite a big impact since the rest of the green there, about half is being given off (indiscernible 01:17:52). So, the amount of auction is very significantly reduced. And this system will continue so we’ve already calculated it ahead of time, how it is in fact supply.

And the line that shows the emissions, and it has been down quite a lot. In fact, 13.3 percent because it was the COVID year, but the year before it was also around nine percent average. The power sector
is just almost 15 percent. So, for them, it's very much a matter of switching from coal to gas and gas to renewable. That was a big impact. But we also see industry is now making more and more efforts.

Next slide, please. So, this is our price scale. It's a bit more dramatic than what I've seen before. And you can see just now this is almost touching 60. This is euros, so you should multiply it by 20 percent or by 1.2 to get U.S. dollars. So, we are now around €50, which is around $60. And, of course this is basically a bit of a concern on the market and why it is happening right now, et cetera.

But what is quite clear in our view, or from the market analyst, is that earlier this year or late last year, there was this announcement that we should go from 40 to 55 percent reduction in 2030. And that means also the amount of allowances coming out to the market for ETS will also reduce.

It took some time for the market to realize it, but suddenly everybody started to believe in this, and then the prices started to skyrocket. And now, we are a bit down again, as I said, under 50, so let's see
where it stays. But it's become a very interesting market.

Next slide. But you can see in the past we had a lot of ground, around five years or for many years, so we had some difficulties to let this market go, also to generate the incentive for reinvestment that we also want.

Next slide, please. So, as I said, we update our legislation, and we will also look at the possibility to introduce an emissions trading for emissions for building heating and road transport and also maritime transport. But the legislative proposal will come on the 14th of July, so very soon.

So that's the end of my overall presentation.

Then I thought, if I may, just say a little bit more about the financial aspects since this is also what you are a specialist in. So according to the European -- we have the European Securities and Market Authority, which is another association above the national authorities. They have calculated that the value of the market in the EU is around €840 billion per year, so it's slightly up for us at least.
A very large part of this is the derivative markets, and most of it got traded on exchanges, a little bit also on over-the-counter.

In our view, derivatives are useful because they help the ETS operate as the industry and the power sector to make contracts where they don't have to put up so much cash, but they can get the certainty that they can buy -- get their allowances in time for the compliance and pay at that time. So, this, you all know how this works.

And then the contracts are offered by exchanges and financial firms, which are free to offer the products and develop their business within the limits of the regulatory framework. So far, most of these secondary markets took place in ICE Futures Europe in London. I'm sure Mr. Bennett will talk more about this later. Please also note it will move to the Netherlands very, very soon due to Brexit presumably.

And when it comes to the oversight, like my colleague said, it's very important to keep now since we have such a big financial instrument to have a safe and efficient trading environment to keep credibility
for the ETS, both as a climate instrument but also a
financial instrument.

So, the derivatives of the emissions
allowances were classified as financial instruments
from the beginning in 2005 and in 2018 also spot
allowances were on the list of financial instruments.

So basically, now all parts of European
carbon market are subject to the same regime,
applicable to the EU financial markets. And they have
this legislation in all the markets and financial
instruments and market abuse regulation and anti-money
laundering directive.

So maybe I will not go into all the details.
I can send some within the statement later. But
basically, we have regulation supervision of the
auction platforms on the secondary market trading
venues. We have regulation of the financial
intermediaries and rules to prevent auction market
abuse. For example, market manipulations insider
dealing, unlawful disclosure of nonpublic information,
and also, of course, against money laundering and
terrorist financing. So, all of this is one
legislation.

We also have rules about transparency and position reporting. So, on a daily basis, this has to be reported to the authorities. And also, every week it has to be given in a bit more detail so that we can follow up if something strange is happening on the market.

Finally, on the cooperation between competent authorities. So, in the EU, they have 27 national authorities and then the European one. And they also can exchange information with countries outside of the EU. So, the national authorities are members of the National Association of Securities Commissions. And they also cooperate with the SEC and the CFTC and -- yeah. So, the transactions in addition to allowances can happen both in the EU and outside of the EU. It's important to have a good cooperation in place between the relevant authorities.

Following the increased interest in carbon trading because of this increased price, they have some entities that might be associated with speculation. That also includes the interest in the carbon markets.
So, although the information that we have on total open positions showed that we hold the relatively small side of the market, it's important to follow this development. And the political pressure on us includes also to kind of do something about it. But so far, we are keeping -- thinking that this market is healthy as it is.

We also look forward to having more cooperation with the U.S. So, thank you very much.

CHAIR WIGGINS: Thank you. Gordon?

MR. BENNETT: Hi there. Good morning and thank you for the opportunity to present on not one but two panels today. I feel honored.

My name is Gordon Bennett. I'm the Managing Director of Utility Markets at ICE, which means I'm responsible for ICE's natural gas and electricity portfolio outside of North America, gathered with our global portfolio, and most importantly for the purpose of today, our global environmental portfolio.

In today's first panel I'm clearly the odd one out, as the previous presenters are all important policymakers for cap-and-trade programs whereas I
represent an operator of a network of financial markets. However, I'm more than happy to provide an overview of ICE's newest market in carbon cap-and-trade, which is the UK allowance.

But before I do provide some details on the UK ETS, I would like to briefly introduce some macro themes around finance and the energy transition, and in particular, carbonomics.

Arguably, the UK is part of and along with the EU witnessed the birth of carbonomics 15 years ago with the introduction of the EU ETS in 2005.

If we could go to the next -- yes, one more slide, please. So, the purpose of financial markets is to allocate capital and manage risk. And valuation is at the core of this. If I go back to my accountancy roots, there's a three-tiered fair value hierarchy with quoted markets sitting at the top, such as ICE's New York Stock Exchange equity markets, and ICE's derivatives exchanges.

Why do they sit at the top of the scale of the fair value hierarchy? It's because these prices are executable and can transfer risk, and therefore the
most precise form of valuation.

This risk management function is integral to
the growth of the new economy because we allow
corporates smooth their earnings and importantly
provide access to more forms of capital and cheaper
forms of capital.

So, we're now entering an era of sustainable
finance with different valuation methodologies and
required value externalities such as pollution. This
is the era of carbonomics.

Next slide, please. The energy transition,
or the latest energy transition because energy's been
transitioning since the dawn of civilization, is
changing the current merit order of energy use to meet
the goals of the Paris Agreement.

We use energy for heating and cooling,
electricity, mobility, and as feedstock for products.
In order to meet the goals of the Paris Agreement, the
fuel merit order will need to adapt towards less
carbon-intensive energy. And one of the keys to
enabling this transition is the application of
carbonomics.
Next slide, please. And so here we come to the UK, and in particular, the UK electricity sector. As Hans said in his presentation, the electricity market does not get any free allocation, and so the UK electricity and the European electricity sector have been living with carbonomics for 15 years now, and so it's the best example of carbonomics in practice.

So, the application of carbon pricing through cap-and-trade programs, and in the UK's case with some unilateral policy support, has successfully removed coal from merit order of electricity generation.

The application of carbon pricing effectively addresses the green premium issues that Bill Gates refers to in his book *How to Avoid a Climate Disaster*. Carbon pricing erodes the green premiums.

And so, let me refer to the electricity generation sector under traditional economic model, the gross profit margin of a coal-fired power station which is referred to as the dark spreads is higher than the gross profit margin of a natural gas-fired power station referred to as the spark spread. And so, coal is the highest in the merit order based on a
However, if we apply the cost of carbon at COVID prices, carbon-intensive natural gas -- natural gas, pardon me, carbonomics changes the merit order so that natural gas is more profitable. It is called the clean spark spread, and it appears higher in the merit order than the clean dark spread.

And in this graph, you can see the line at the bottom is the clean dark spread. And it's important to know not only is coal less profitable, it was actually loss-making. So, whenever you make a megawatt of electricity produced, you're losing money. And therefore, this moves coal out of the merit order.

It is important to note that carbon pricing doesn't work on its own. So, when I refer to dark spread and spark spread, the values of the other parts of the equation are important to generate the desired outcome. So, whatever your view is on different types of fuels and carbon content, knowing the value of these fuels is integral to carbonomics.

Next slide, please. And this is the outcome. This is the electricity generation by fuel source since
1998. And effectively, today is -- coal is all but
removed from the electricity generation merit order in
the UK.

Next slide, please. So, the next slide shows
the transition that has been made in the UK over the
last decade, which has now resulted in emissions being
reduced by approximately 40 percent from 1990 levels.
You're now looking to see how this further develops in
the future and under the UK ETS rather than the EU ETS.

Next slide, please. And one more, please.

So, the UK ETS, this should be relatively brief because
we're really at the very beginning of this program.
Now, that came into force at the beginning of this
year. The first auction and the opening of the
secondary market was actually only two weeks ago. So,
we're witnessing the birth of the UK ETS.

So, my objective is really twofold: to
benchmark the UK ETS versus the other cap-and-trade
programs that the panelists have discussed before me,
and to give some insight into how the commencement of
trading has behaved since the 19th of May.

Next slide, please -- oh, sorry, yeah. So,
the UK ETS is very much a lookalike of the EU ETS.

There are some minor differences in the operation of the auction. So, the UK auction actually looks a bit more like California and RGGI, as there is an auction sale price. It's £22. And the auction can clear with partial allocations.

There are some minor differences between the UK and EU ETS, but they're largely the same. There are also -- there's a little bit of difference in cost containment measures in the first two years for the UK ETS. But after the third year, I believe these align also with the EU ETS.

So, the slide shows the current cap as the greenhouse gas emissions trading scheme order of 2020 in the dark teal. And then in the light teal, we have the provisional emissions for 2020. However, it's important to note that the cap here is before the recent government announcement to reduce emissions to 78 percent of 1990 levels by 2035.

And so, there is going to be a cap consultation due later this year. The government indicated that it would consult on the cap's trajectory
within nine months of the National Climate Change Committee's advice on cost-effective pathway to net-zero emissions. This advice was published in December of 2020 and included recommended levels of emissions recovered sectors to be 106 million tons in 2022 and 61 million tons in 2030, and those are shown in the red lines in the graph.

Next slide, please. What does the UK ETS look like versus the other cap-and-trade programs? No surprise, really, that the EU, given that it's covering 30 countries, is by far the largest in terms of installations. The UK does, however, rank second in installations and also in terms of the cap.

California is the most ambitious in terms of emissions covered, so they -- we saw earlier that 80 percent of emissions are covered under the California program. And this is really driven by the inclusion of transportation and heating fuels where the EU and the UK is focused on electricity generation and heavy industry. And as spoken earlier, RGGI is solely on electricity generation.

And the bottom graph on the right-hand side
shows the cost of carbon. And the UK is leading in
terms of the cost of carbon at nearly $70 per ton.

Next slide, please. So how are the auctions
with secondary market performed in the first two
auctions? The auction performance has shown very
strong cover ratios, and the first two auctions have
raised over half a billion pounds for the UK
government. The secondary market is approximately 500
lots a day or 500,000 tons.

In the graph that's showing how the UKA
benchmarks against the other cap-and-trade programs we
operate. The top row shows on a lot basis and the
bottom row is on a notional basis. As the EUA is
clearly the largest, I've also stripped out the EU
numbers on the right-hand column to get a better
comparison of the relative size of California and RGGI
and UKA together.

So, the UKA at 500 lots a day is about half
the size of RGGI on an annual moving average basis.
But in terms of notional value, it has already
overtaken RGGI. The UK ADV would need to rise to
approximately 2,000 lots a day to become the second
largest cap-and-trade program by notional value, overtaking California.

In the two weeks since we have operated, however, if you compare RGGI ADV and the UK ADV, they are both coming in at around the 500 lot ADV mark. So, they're quite similar in cap sizes, but also quite similar in ADVs currently as well.

Next slide, please. This just shows the daily breakdown for this launch and the growth of the open interest. And I can report as of this morning, the open interest is reaching nearly 3,000 lots or three million tons.

And then lastly, next slide, please. Our last slide shows how emissions have been reduced in the UK since 2010, showing the emission reduction has largely been targeted at the fuel combustion sector, electricity generation. As per the earlier slide, the UK has already transitioned away from coal to natural gas and electricity generation.

And so, the UK ETS is really a test of policy for post-coal to gas switching. So, it's going to be very interesting to see how policy develops in the UK
carbon cap-and-trade market because it moves easier when in the electricity generation fuel sector have largely been one now.

So how is electricity generation going to continue to decarbonize, and how will the industrial sector have largely been allowed to get the allocation? How does the industrial sector going to start to decarbonize more under the UK ETS program?

And then finally, what happens with those sectors not covered by the cap-and-trade program? Will we see more ambition in terms of -- a bit more like California in also addressing heating fuels and transportation fuels? Thank you very much.

(Brief Pause.)

CHAIR WIGGINS: I may have been on mute there. Let me try this again.

I'm going to open the floor now to questions and comments from the Associate Members on the prepared remarks. And Abigail, I think we have one question in the queue from Paul Cicio; is that correct?

MS. KNAUFF: Yes, that is correct. Thank you.
CHAIR WIGGINS: Okay, thank you. Paul, please go ahead.

MR. CICIO: Sure. Hey, thank you very much. I can't think of anything more important than addressing climate and succeeding to reduce greenhouse gas emissions domestically and internationally. So, this is an extremely timely target.

As a reminder, though, my organization represents energy-intensive, trade-exposed companies. These are steel, aluminum, cement, chemicals, plastics, glass, paper, food processing. And these industries in the United States consume about 80 percent of all the energy of the entire U.S. manufacturing sector.

And the manufacturing sector in the United States is very large. We are 11 percent of GDP, and we employ around 13 million really well-paying jobs. So, my primary comment here is from -- this assumes a carbon tax will be placed on domestic industries such as mine. And we are unique in that we do compete with the likes of producers of these products from places like China.

And in fact, our carbon footprint is a lot
less for our output than China by quite a large major.
So, if we're going to talk about carbon pricing, we
have to talk about a border adjustment because without
a border adjustment provision, then these
manufacturers, these energy-intensive manufacturers
will shift their production offshore. That's called
greenhouse gas leakage.

So, you shift these greenhouse gas emissions
offshore without -- and the jobs for that matter. And
we don't want that. Nobody wants that. And so, one of
the things I would recommend, Mr. Chairman, is for
maybe the next commission advisory committee is that we
have a session on border adjustment.

To finalize my comment before I ask a
question is, border adjustment may sound easy, but it's
not. A border adjustment requires our competitors in
foreign countries like China to third-party validate
the embodied carbon in the product that they import
into the United States. Getting them to do that is
hard. You have to have country -- that country support
to enforce that third-party validation.

And as we all know, the weak spot of the
Paris climate accord is enforcement. So, this gets -- kind of really gets to the heart of it. If we're going to do it, we have to do it right and not gloss over this very important issue of greenhouse gas leakage.

We need manufacturing jobs. In fact, we need more manufacturing to produce the products for the clean evolution going forward.

So, my question to the EU, especially, is we understand that there are efforts on the part of the EU to establish a border adjustment provision, and I'd like to hear from that. Thank you.

MR. BERGMAN: Am I supposed to reply now, or?

CHAIR WIGGINS: Yes, please go ahead.

MR. BERGMAN: Okay. Thank you for that question. Yes, well, just take one step back. When the EU ETS was created from the very start, the competitiveness of the energy-intensive industries was, of course, a key issue to deal with. And therefore, we all looked from the start to better the system with pre-allocation to industry so that they would get most of their costs covered by this pre-allocation but still have a marginal cost increase, an initial marginal
benefit for reducing emissions.

In the beginning, the system was a bit crude and it was more based on past historical emissions. So, the more a facility emitted, the more of a pre-allocation they got. Then it changed from 2013 to this benchmark-based system, as I said, so basically, the most efficient installation gets more or less what they need in a certain sector.

They have around 50 different products benchmarks. So, for example, we can see that kind of certain chemicals, something gets this amount of allowances. And then if you emit more, you have to buy the rest.

Because we're quite fine so far -- I mean, we haven't seen much of this carbon leakage, which is indeed a problem because if we move emissions abroad, then we didn't gain anything, and we lost jobs on the way, as you say. Now with increased ambition, and it has been announced to increase carbon prices, there has been a political statement that we should even more think about this issue. And the carbon border adjustment mechanism, as we call it, has been promised
to be part of the proposal on the 14th of July.

And so you can imagine it's a little bit difficult for me to go into details because it's one of the issues that is being discussed, I think, until the last day, and that's the 14th of July, how that exactly will look like. But in the -- it's because of ETS that there is this potential competitiveness problem, so that will be somehow the link to it...

Then we have the issue, as we all know, it's very difficult to get -- how to motivate from -- also the rest of the world and possibly political issues, et cetera. There are many issues to deal with. And I think it's a bit difficult for me to go into more details and I've -- you have to be a bit patient until the 14th of July. Hopefully that day we will have a proposal. And that can be studied, and surely very much discussed.

The good thing, I think, about this is that many countries around the world have been contacting us and the European Commission and say, "How can -- what do we have to do to not be covered by this broad adjustment for our industry?" So, it's put a little
bit of speed behind some slow-acting countries. But nevertheless, it will not come without any bilateral discussions, for sure.

But until then, we will continue this pre-allocation. I understand this is what also our colleagues are using often. Thank you.

CHAIR WIGGINS: I believe Matt Picardi has a question. Matt, please go ahead.

MR. PICARDI: Yes, thank you. Thank you, Dena. Quick question for Hans and Gordon. In the U.S., I would say that we -- our carbon emissions programs that are market-based ones that have been developed so far, focus on, you know, compliance and efforts to reduce emissions of sources. And they're run in conjunction with programs, such as renewable portfolio standard programs or state-type programs that provide incentives for the development of renewable resources.

I was just curious, what -- how big a role do the carbon markets that exist in the EU play in supporting the development of renewable resources at this point in time?
MR. BERGMAN: And maybe I can start, if you want. Okay, I think when the renewable power production mainly was in its infancy, it took away the huge reversal of industry 100 years of the -- within the sector. There was a lot of, let's say, state support for that. And that's when ETS was coming more and more, the need for, let's say, subsidies has nearly vanished, I would say, for the most of the renewable electricity, the more (indiscernible 01:47:44) standard. And the carbon price creates that incentive by itself. So now, we have to be -- and member states more give support is what we call more -- yeah, newer technology, renewable energy, and also say infrastructure, et cetera, while --

So, it's -- certainly, the carbon pricing has very much helped in the power sector. And I think that was what Mr. Bennett just showed with his slides. Maybe we can show it. But we have the subsidy schemes that were created for the renewable energy are sometimes, you know -- of course, some are given for ten years or so, so some of the producers are now probably getting quite a bit of benefits because they
have the low cost because of the subsidies because it
was thought to be very expensive. And now, they
increased the prices, somehow going after this because
of the ETS, and that gives an extra benefit to this
renewable electricity, which has basically zero costs —
— operating costs. But maybe Gordon Bennett can
illuminate.

MR. BENNETT: I would agree with all of that.
You know, in the beginning, when renewables were more
expensive, then there were certain incentives in place,
whether these were feed-in tariffs to de-risk renewable
investments. And those were complemented by the carbon
pricing.

But as Hans said, now, we live in a world
where really renewables is emergent, and we don't
really need the feed-in tariffs or tax incentives in
it, and coal has been — coal has come out of the merit
order. And increasingly, renewables has come into the
merit order because of — solely because of carbon
pricing.

I think that the question is now, you know,
what policy support is required for the — for whatever
the next renewables are going to be? So, whether that
be hydrogen or carbon capture, because as I said in my
presentation, that was sort of the -- that that first
win of coal to natural gas, which has largely been done
in the UK, and it's increasingly being done in the EU,
so how does hydrogen and things like carbon capture get
into the merit order? Is it solely through carbon
pricing, or is that also going to require some sort of
incentive policy interventions and incentivization to
de-risk the investment required in these markets?
CHAIR WIGGINS: I think we have one more
question from Sean Cota. Sean?
MR. COTA: Good morning. Can you hear me,
Dena?
CHAIR WIGGINS: Yes.
MR. COTA: Thank you. I have a couple of
questions. One is for Jena -- Rajinder from carbon --
I apologize if I've mispronounced your name.
In a CARB allocation system like California --
that California has developed, is that workable in a
regional setting, like has been proposed in the
Northeast with New York and expanding, and how would
they handle leakages? So that's one question.

For Gordon, how does the UK measure carbon with the ICE program? Is it everything, abiogenic and biogenic emissions? And how do they allocate that?

Thank you.

MS. SAHOTA: Hi, and you got my name right at the end, so no apologies needed there.

For the allocation system in California, it's important to recognize the role of allocation to the players in the market. And we give it to energy-intensive, trade-exposed companies. So, it's really manufacturing. It's not a transportation fuel supplier. It's not electricity generation plants, because they are able to pass the cost of compliance in the market on to consumers.

And so, in California, we have a unique situation with our transportation fuels, that it's kind of an isolated market, because the specs for our fuel to address air quality issues. And on the electricity markets, we've been pushing on renewables for a very long time. And we've actually pushed out coal over the last ten years, almost entirely out of our portfolio in
the state.

So, when I think about the regional programs, such as the Transportation Climate Initiative, and we're talking about transportation fuels, we would not give transportation fuel free allowances. And so, if the TCI decided that that was something that they wanted to do, then a new methodology would have to be developed for that. Like, what is the basis, what is the potential for leakage?

And people are going to go buy gasoline. It's not like people are going to stop selling it because there's going to remain a demand for it until there's an alternative for it. So, the potential for leakage is very low in those sectors.

With the industry, we have a process that we look at global markets, global trade exposure, and regional trade exposure to understand how much we need to, quote-unquote, "protect the industry from leakage."

And that process has been modeled after work that was done in Australia, work that was done in the EU ETS. And so, there are some very basic features and all allocations schemes for industry that you'll
find a program to program with little tweaks here and there for that specific region of the world. I hope that helps.

CHAIR WIGGINS: Sean, did you have another question?

MR. BENNETT: Hi there, Sean. I think he had a question for me. The cap-and-trade program only covers electricity generation and heavy industries. So, agriculture and land use don't come under the cap-and-trade program, but those emissions are counted.

So, UK's emissions include agriculture and land use, but they're not covered under the cap-and-trade program. And I'm not sure if any cap-and-trade programs cover those markets. Thank you.

CHAIR WIGGINS: Okay. I believe that Dr. Sandor has a comment and a question. Dr. Sandor, please proceed.

DR. SANDOR: Thank you. I'm, Dena, 700 years old, so I couldn't be more pleased to have some comments. It's hard to believe, but watching this from Geneva 30 years ago, going into the Rio Summit when people would say, "Oh carbon markets will never work."
They're silly. If price is not important, they'll get it all wrong.

And listening to each and every one of the presenters, I think we would make anybody who has skeptical doubts about carbon markets turn their head. And this presentation would make (indiscernible 01:55:16) and J.D. Dales very, very happy to see that their ideas have been implemented so well. So, from Rio to Kyoto to now, what a journey. And brilliant presentations by everybody.

There is a point and an observation and a question. So, I have the privilege of being at the opening of the Chinese carbon market this month to make a presentation (indiscernible 01:55:55) on and you’ve all have armed me with great evidence.

So, my question quickly to each of the participants, what if any arrangements are you making to integrate the Chinese cap-and-trade system into RGGI, California, or Europe?

CHAIR WIGGINS: Who wants to jump in and tackle that first?

MS. SAHOTA: I'm happy to try and go first.
So, in our program, the linkage we have with Quebec is very unique. We started from the same place. We built that program but together they have very similar features.

More recently, maybe about four years ago, we added provisions into our regulations that would let us do other kinds of linkages, so linkages where you send your instruments to another market or linkages where you are now able to accept access from another market.

And so, we foresee that there are options out there for the different kinds of integration with programs that are not exactly the same as ours. And we've had discussions with the different jurisdictions about what that could look like and what that could mean.

The challenge is always going to be that any linkage has the potential to reduce the ambition of your program. And so, there are certain requirements and legislation in California where we have to analyze if any kind of linkage would in any way reduced our ambition. And so that test is really critical, and that's going to depend on the design of the other
programs.

So, the potential is there. And it's all -- it's going to depend on the type of program, the ambition of the other program, and the kind of linkage they're looking for.

SECRETARY GRUMBLE: I -- this is Ben in Maryland. And on behalf of RGGI, I just wanted to say that a couple of years ago, we entered into a formal MOU with Chinese energy markets to help inform them on lessons learned from RGGI over the last decade and also to provide technical advice or support. World Wildlife Fund and EDF were involved in that too.

So, I would just add that it's a very important point. And we're in the intentional learning and sharing mode with the Chinese as they attempt to make historic progress on this front.

MR. BERGMAN: Maybe on our side, also to say on the one hand, with China, we have also been working a lot closely with them for many years to provide -- or at least advisory, knowledge-sharing events. When it comes to -- and we think it's, of course, good that they are going in this direction.
When it comes to linking itself, we have our main experiences that we may be linking with Switzerland, which are very tiny as compared to the EU. But it was a good learning exercise in that it's relatively complicated, more than we thought perhaps. And I think like colleagues in California said, what is in principle a good idea and attractive, it's also a little bit risky because on the one hand, once you link two systems, you have to be sure that you don't water down your own system.

But what is also perhaps even more difficult, you don't know what will happen, what kind of government will operate in that country a few years later. And if they turn 180 degrees, and you have the link, you have to be very careful. So, I think you need to provide a lot of sort of very good lawyers involved because it is now not just kind of a nice cooperation, but it's really a billion dollars, as I said, every day being traded. So, if something goes wrong, you know, we can have a lot of problems.

We were trying to make a very strong cooperation with Australia and they came over to Europe
on a weekly basis almost. And then an election, and
then the whole thing was thrown in the bin. So, you
know, that can happen. That was before we were linked.
But, you know, I'm saying that it's good to link, to
cooperate, but it's also a little bit of risk.

CHAIR WIGGINS: Abigail, do we have any other
comments or questions from the Associate Members?

MS. KNAUFF: We do not. We do have a
question, two questions, from Tyson Slocum for the
Members.

CHAIR WIGGINS: Okay. We will move to the
Members then. Thank you very much for the Associate
Members for your questions and comments. So, Tyson,
we're opening up the floor to the EEMAC Members on
prepared remarks. I think you've indicated you have a
question or a comment, so please go ahead.

MR. SLOCUM: Great. Thank you so much.
First, I just really appreciate the presentations by
the panelists. It was excellent. And my question was
sort of addressed by elements of Gordon's presentation
and by Matthew Picardi's question, that the carbon
pricing initiatives that we've seen, particularly in
the United States with RGGI and California, are not happening in isolation. They are part of a package of policies and market developments. Other policies like renewable energy mandates, market developments like declining cost of natural gas, replacing coal, and significantly cheaper renewable energy, and flatlining energy demand.

I think one of the big benefits of carbon pricing as a part of other policies and initiatives to address emission reductions is the fact that it provides revenue that can be invested for a number of useful emission reduction initiatives. Like in RGGI, there's a lot of money dedicated to energy efficiency. California has a number of very successful robust investment initiatives.

But I just think it's important to note that it doesn't appear that the carbon pricing policies, in the United States anyway, are the driving force in the emission reductions that we've seen. We've seen emission reductions from the power sector in all parts of the United States regardless of whether or not there is an active carbon pricing mechanism or not.
So, I think it's an important tool, but it is not the only tool to address greenhouse gas emissions. Thank you very much.

CHAIR WIGGINS: I don't think we have any other questions from the EEMAC Members; is that correct, Abigail?

MS. KNAUFF: Tyson, did you have a second question?

MR. SLOCUM: No, I had put it in the chat and people could see it. So, it was just on the role of offsets in carbon pricing plans and whether or not they are effective at, you know, resulting in real emission reductions, or whether or not there are compliance challenges associated with them. And so, I don't know if anyone wants to, you know, comment or respond to that.

MR. BERGMAN: If you want, I can say a few words here. So, in the -- from the European perspective that's -- I think around ten years ago, there was a lot of -- the general view was that it's very good to have this credit, and it doesn't matter where emissions are reduced as long as they are reduced
and cheap as possible and all of that. So, we allowed quite a lot of this human development mechanism credits in the EU ETS. And it led for us to run in the surplus, but maybe that was our fault that we allowed too many. But also, part of the discussion, were they really genuine emission reductions?

And then we have now from '21, we have -- our target is what we call domestic. So, everything has to be reduced in the EU. Then we can help by, you know, development aid money and all kinds of money to support poorer countries in the world, but not to take their credit. It could be that this discussion comes back when there will be even more types of targets coming ahead post-2030.

But in that case, it would be very strict, I think, and very limited and very well controlled.

Yeah. So, it's at least for us, it's something that we try now to, you know, clean up our own backyard and not do it elsewhere.

MS. SAHOTA: And I can speak to the California program because instead of trying to model after the clean development mechanism, or leverage some
of the international program, or work that had been
done previously, we created our own domestic offset
program because there were concerns about the validity
of offset programs and credits that had come before our
program.

And our designs took four years of a robust
public process. It was litigated by critics of offsets
in California, who think that offsets are just a free
pass to emit. But we always have limits on the amount
of offsets you could use because we want to make sure
that the regulated facilities actually still face a
pressure or an incentive to reduce on-site.

The other value of offsets is they help with
cost containment because they sell for slightly less
than the allowance prices. And they allow you to fund
activities where you can't necessarily directly
regulate. Maybe, you know, we have a lot of land in
California that is privately owned. Landowners, like
forestry landowners, are very protective of their
rights to manage their property the way that they want
to manage it. And so, offsets offer an opportunity to
act as a carrot to help people come along and do the
sustainable management practices that you need and help
those actually be part of a climate solution and
managed in a productive way that helps on the overall
picture.

So, we do think that they are important.

We've had a program designed specifically for
California, it's been litigated, and limits on offsets
are also important.

MR. BENNETT: Hi, it's Gordon. If I may add
a little bit as well. So, I think that offsets are
certainly difficult. There's inherent issues around
permanence and additionality and measuring quantity.
The great thing about cap-and-trade programs is it's
really the only way to control the quantity of
emissions. But there are -- I think there are real
benefits to compliance programs allowing offsets.
Because, A, it creates a demand pool, and it links it
to a transparent compliance standard. And so, you do
get that linkage, you know.

So as Rajinder said, that California allow
them -- isolates a California carbon offset, and it
trades this spread to a California carbon allowance.
So, I think that despite all of the challenges that are inherent in the offset market, I think that compliance markets have a real role to play to help set what that high bar of an offset is with environmental integrity. Thank you.

SECRETARY GRUMBLE: All right. I know that time is limited, but I just wanted to add on the offset point, I hope the Commission continues to pursue and look at the opportunities for offsets with respect to carbon markets. But the political challenge of the environmental justice, toxic accountability -- so RGGI has not vigorously implemented. It does have the opportunity on a very limited basis the use of offsets. The transportation and climate initiative also in the draft approach on that emerging program also would have a very limited opportunity for offsets.

As someone who also represents the Chesapeake Bay, the nation's largest estuary, that is in the U.S., the possibility for carbon markets for water quality and carbon sequestration throughout the watershed is very important. And the states that are part of RGGI and that are part of the Chesapeake Bay agreement with
the EPA are discussing the possibility of offsets and carbon markets for the future, but it is a very --
there's a significant challenge -- a real challenge of accountability and political acceptance to use offsets more often. So, I hope the Commission continues to look at that possibility. I think it's the future with appropriate controls. Thank you.

CHAIR WIGGINS: Thank you all. And now, we will turn to questions from the Commissioners. And I believe Commissioner Berkovitz has a question to ask. Please go ahead.

COMMISSIONER BERKOVITZ: Yes, thank you, Dena. I thank all the panelists for really excellent presentations. I just have a really basic question to understand, for example, the California and the RGGI program. So, for example, in RGGI, a regional program that the states issue the allowances. So, there's a -- Secretary Grumbles, if there's a 30 percent reduction -- or if RGGI as a whole decides on a certain percentage of reduction, but the state issue the allowances, does that 30 percent go -- flow down to everybody or -- and each state has 30 percent, and then the state -- do 30
percent across the board to everybody? And is that how it works? And similarly, for California, when California issues a certain target, does it flow down equally to everybody, and then the participants amongst themselves?

That's the whole point of cap-and-trade, essentially, that everybody can decide best how to get to that 30 percent. Secretary Grumbles, maybe you want to take the first --

SECRETARY GRUMBLIES: It does flow down, but it's also -- the 30 percent component of our regional cap has to be implemented by -- under state law in each of the states. So, it -- you know, there is some flexibility on how each of the states gets there, but that goal -- the goal is to get to 30 percent.

And of course, when we couple our renewable portfolio standard and other complementary programs, we are trying to get to 56 percent, half as dirty by 2030, 50 percent -- 56 percent reduction in greenhouse gas emissions in our state. So is that -- it does -- it's a regional cap, and each of the states commits to try to put in place to do their part to ensure that region-
wide we get to at least a 30 percent reduction.

COMMISSIONER BERKOVITZ: And that commitment has -- RGGI was started -- when was RGGI started?

SECRETARY GRUMBLES: Back in -- 13 years ago is when we had our first auction, 2009. But there were formal agreements among governors dating back a few years prior to that.

COMMISSIONER BERKOVITZ: And that regional agreement, that's withstood. You've described the new states that want to come in. But in terms of the existing states, that's pretty much survived the various, you know -- there have been various political changes and governorships and legislatures.

SECRETARY GRUMBLES: They've survived political changes. There have been a few legal challenges that have not succeeded -- trying to say it was an interstate compact. So, flexibility is very important for each of the states, and political leadership and use of the market to set the prices and not give the allowances to the regulated entities but direct them to use the market as an auction, and the secondary market, to make sure they have they have the
acquired -- the requisite number of allowances each
time the control period, the compliance period occurs.

COMMISSIONER BERKOVITZ: Okay. Thank you.

Thank you. And then California, when you set these
overall goals, is it then that's the point of cap-and-
trade that the entities figure out how to best -- some
industries have more need or less need? They can trade
amongst them --

MS. SAHOTA: That's correct. Yeah, that's
correct, Commissioner. We did -- so it's an aggregate
cap set at the state level for GHG. There's no cap for
individual facilities under the program because these
are not like traditional air pollutants that have a
localized impact. They're global emissions. And so,
as the state is achieving that jurisdictional-wide
target, we are -- we believe that is the right
approach.

We did look at an option in 2017 in response
to some of our environmental justice advocates who
wanted us to take that aggregate cap at the state level
and apply it at every individual facility. So, every
individual facility would have to reduce by 40 percent
What we quickly realized is that some industry that was high leakage exposed and that was -- there was very limited technology known of right now to get them to that 40 percent, we just had to turn those off in the modeling because there was no option for them to get to that 40 percent.

And so, the cost of doing that individual cap per facility versus the aggregate cap was almost an order of magnitude higher to the economy by 2030 and to jobs and household income just because of the fact that you've applied that aggregate level at the individual facility level. And so, we did the exercise because our environmental justice community wanted to look at it. And it became quickly apparent that it was something that would just wreak a lot of havoc on the economy for the state.

COMMISSIONER BERKOVITZ: Okay. Thank you.
CHAIR WIGGINS: I don't think we have any more questions from Commissioners; is that correct?
Any Commissioners have any questions?
MS. KNAUFF: We don't have any questions at
CHAIR WIGGINS: No further questions, right, Abigail? I'm sorry, I couldn't hear you.

MS. KNAUFF: Yes, no additional questions at this time.

CHAIR WIGGINS: Okay. All right. Well, thank you all for the participation and the presentations on the first panel. We will go ahead and move to the second panel today, which will provide a survey of carbon derivative products listed on three designated contract markets. We're going to hear again Gordon joining us for the second panel as well as the first panel. We'll hear from Gordon Bennett, the Managing Director of Utility Markets at the Intercontinental Exchange, Christian Schneider, the Managing Director of Strategy at Nodal Exchange, and Derek Sammann, the Senior Managing Director, Global Head of Commodities, and Options Products at CME Group.

Gordon, we'll take it back to you.

MR. BENNETT: Hi there. Thank you. Hello again, everybody. So, my objective for this panel is to give an overview of the ICE environmental portfolio
and an update on performance and any new initiatives
since my colleagues, Mike Kierstead and Steven Hamilton
presented to you previously.

First of all, as discussed in the first
panel, ICE offers solutions whether quoted markets or
complemented by data services, access to being able to
fair value products and to drive sustainable finance
decision-making.

If you could turn to the next slide, please.

And the next slide, please. Importantly, ICE entered
the environmental markets at a very early stage, with
development going back to 2003 with its collaboration
with the climate exchange and Dr. Sandor, who is here
and it’s great to hear from him, and then the
subsequent purchase in 2010.

So, we have a long history in operating
environmental markets. The New York Stock Exchange has
sustainable ETS with over $5 billion in value. And
Steven Hamilton would have introduced you to our ESG
equity futures portfolio at the last meeting. Our ESG
data offering is expanding rapidly to help customers
attribute value as we grapple with the transition to a
sustainable finance business model.

Next slide. However, for the purpose of this meeting, I will focus on our environmental portfolio.

And next slide, please. And one more. So, this slide gives an overview of our environmental portfolio, which we split into carbon and green products. Our carbon products are further split between allowances and offsets. Allowances are issued by regulators in cap-and-trade programs and are highly standardized. And importantly, as I said earlier, the only mechanism available to control the quantity of emissions. And so, from a net-zero perspective, the cap, the quantity of emissions, can therefore be aligned with a net-zero road map and commitment.

Offsets are created when a project reduces emissions and where emission reductions are only economical if there is additional revenue from the selling of the offset, otherwise known as additionality.

Most offsets today avoid the emissions rather than reduce emissions with the exception of carbon removals, whether nature-based or technology-based. In
contrast to a carbon allowance, it does not control the overall quantity of emissions. Our allowance markets of EUA, UKA, CCA, and RGGI were all covered in the first panel session. And until recently, we've offered two offset contracts: the CER, the certified emission reductions, and the CCO. These are effectively compliance offsets because both the EU and California allow the percentage of covered entities compliance obligation to utilize offset.

And as I said in my answer to your previous question, this created a demand group for offset and also let to the prices in offset being anchored to a transparent liquid allowance market. Under phase four of the EU ETS, offsets no longer are allowed to be used. And therefore, we've recently delisted our CER contract. And so, for the moment, the CCO is our only offset contract in the environmental portfolio.

Our green products include both renewable fuels, such as biodiesel and ethanol, and renewable attributes, such as renewable electricity certificates. These attributes are sometimes referred to as guarantees of origin, and the electricity sector, for
instance, allows participants green electricity consumption. Renewable electricity portfolio is perhaps less well known than our carbon portfolio. It covers a number of power markets in the U.S., and it surprises many people when they find out that the most liquid renewable electricity market in the world are in North America. Like the carbon cap-and-trade programs in the U.S., these are also state-driven initiatives.

Next slide, please. So, to get an idea of the size of ICE's carbon markets, on this slide, we show the tons that are traded in ICE's carbon markets in aggregate but also under each cap-and-trade program. And almost 14 gigatons, or 14 billion tons, of carbon trade on ICE each year. That's equivalent to 40 percent of the world's energy-related carbon footprint.

In 2021, approximately 60 million tons and $3 billion of notional value is traded each day in our market, and approximately 95 percent of all traded environmental futures and options are traded on ICE. The open interest of our carbon portfolios in Europe and USA is approximately $100 billion and $10 billion, respectively.
Next slide. Some other 2020 highlights include strong year-on-year growth of 14 percent in our environmental portfolio open interest. The UKA -- the EUA market, rather, particularly has seen very strong growth in ADV, and EUA options have had an open interest record with over 800,000 lots or 800 million tons. In the USA, RGGI has seen the strongest growth with ADV of 75 percent. The U.S. RECs open interest is up 15 percent as well. And in fact, leading up to 2021, the U.S. portfolio is actually our fastest-growing portfolio within the environmental complex.

Next slide, please. I will touch briefly on the offset market. Clearly, there's an increasing focus on the rules of the offset markets with many working groups being set up including the Taskforce on Scaling Voluntary Carbon Markets, which we sit on, and I think you'll hear from Annette later. As you will see in the next slide, the offset market is not new. It's been around for many years and ideally will play a role, a complimentary role to allowance markets in achieving net-zero targets.

Unfortunately, if we had to meet net-zero
targets, we probably need a value to -- a way to value natural capital in such a way that there are economic incentives to preserve rather than extract natural capital and offset that could play a key role in creating value in preservation.

Next slide, please. This slide shows the relative size of the offset market. On the left-hand side, the voluntary market is benchmarked along with the compliance market of EUA and CCA. And like I did in the first panel, I've stripped out EUA's because it's so much bigger than all of the other markets; it's difficult to distinguish other markets. But the offset market today is small in comparison to the compliance market. However, it appears between 2008 and 2012, there's actually a fairly robust tradable offset market in the ICE certified emission reductions. Over this period, approximately 3 billion tons of CERs traded. These CERs were allowed to be utilized for compliance purposes under the EU ETS and therefore traded as a spread for the EUA and effectively created an international price of carbon denominated in euros.
In the table at the bottom, it shows that there are many different types of offsets and quite a wide range of values between those offsets. I'd also add that the largest component of offsets today are renewables. And there's quite a large swathe of opinion now that -- the discussion around whether renewables continue to meet the additionality test. So perhaps, when we're thinking about offset, the mix of offsets that we have today may look very different in the future and to help sort of meeting our net-zero targets.

Last slide. So, my last slide covers our most recent offering in the carbon space, which is our global carbon futures index. We launched this approximately a year ago. This is our volume weighted aggregate index of ICE carbon allowances. There are contracts between the EUA, CCA, and RGGI. We will hopefully be adding UKA in the course of the next year or so.

The purpose of this index is to bring transparency to the carbon pricing of the most liquid carbon allowance markets in the world really trying to
create a proxy for a global price of carbon. And as
carbon evolved into its own separate asset class, the
index can serve many purposes. But initially, we think
it's a useful benchmark for corporates, regardless of
whether they are subject to carbon cap-and-trade
mandates or not, to be able to benchmark their own
shadow or internal price and carbon assumptions in
their business models.

So finally, this is the era of carbonomics.
And as I always start my presentation at ICE Futures
Europe board meetings, carbon will become the most
important asset class in the world. Thank you very
much.

CHAIR WIGGINS: Thank you, Gordon.

Christian?

MR. SCHNEIDER: Yeah. Good morning. My name
is Christian Schneider. I'm representing Nodal
Exchange and EEX Group today. First of all, I'd like
to thank Mr. Berkovitz, Chairman Behnam, and the
Commissioners for giving me the opportunity to speak
and to share my perspective on carbon markets. Also,
special thanks goes to Abigail for the excellent
preparation of this meeting.

If you could go to the next slide, please.
Let me start here with a very quick intro of EEX Group. We are a specialized commodity exchange group. We operate energy, environmental, agricultural, and freight markets. And apart from commodity derivatives, we also run physical spot markets. We are active in environmental market since about 16 years now. And the companies belonging to the group, which you can find in the lower part of this slide, they are all specialized in different markets and provide local support for the local customers.

So, for example, Nodal Exchange covers all the U.S. markets, and they belong to the group since about four years now. We are present in 17 locations worldwide and are part of the Deutsche Börse Group.

Next slide, please. So, when talking about carbon markets, probably it's important to first take a step back and look at the bigger picture because carbon emissions are a real global challenge, and it can only be addressed collectively by all countries.

So where do carbon markets exist as of now --
and where not -- and the map you see here is borrowed from the ICAP, International Carbon Action Partnership, which shows the state of emission trading schemes in the globe, the most recent one. And you can see in blue those ETS which are already active, in dark green those that are under development, and in light green these are at least under consideration. And I hope it gives you a little impression about global coverage and the state and the roadmap of carbon markets worldwide.

So far, we covered 16 percent of greenhouse gas emissions with emission trading scheme. The Europeans have been first with the EU ETS in 2005, and the U.S. is present with the two-regional scheme for California, Quebec, and RGGI. These are the two largest carbon markets today. But also, let's keep an eye on China which announced to go fully operational with their carbon trading on national level this year, which will become the largest market, by cap at least.

Without mentioning all the carbon markets, I think in the end, no matter how big or small an initiative is, everything counts towards our common goal, which is limiting the global warming by
eliminating carbon emissions.

Please go to the next slide. And eliminating carbon emissions is a big target in itself because we have to reduce more than 50 billion tons of manmade CO2 equivalent greenhouse gases which we emit every year to zero, or achieve net-zero carbon neutrality to be more precise. And carbon pricing through carbon cap-and-trade schemes is an important mechanism to support that. Not the only one, that's true, but a very important one -- because through the market, we can determine the most cost-efficient way for a transition to a low carbon economy.

And we as energy and environmental exchanges and I'm speaking for all of us here on this panel, we can contribute to that. We build communities. We build markets. We determine fair prices, we provide nondiscriminatory access, provide price transparency, provide risk management tools. In other words, we apply all these proven mechanisms from financial markets to create trust amongst market participants for transacting efficiently in a safe and reliable, regulated environment for carbon as well.
Next slide, please. So, this is an overview of all the environmental products listed and all the services offered by EEX Group in this area. As you can see, it includes more than 20 different carbon contracts across North America, Europe, and here also New Zealand. We listed all the major contracts there, California Carbon, RGGI, EUA, and so on. We are active in primary markets as well as secondary markets, spot and derivatives. I will show you an example for that in a minute.

But we also didn't stop here. We also went into other emission allowances like sulfur dioxide or NOx emissions under the EPA Cross-State Air Pollution Rule, for example. Actually, this part has actually been expanded this week by a new contract. We list the various renewable energy certificates, guarantees of origin, renewable fuel credits, like LCFS and RINs. And we did so in order to accommodate other environmental programs which are supplemental to carbon markets and further help to decarbonize our world.

In the end, it's a big puzzle of different components which contribute to the same target. As you
can see, we have a very, very granular set of contracts. And we're very proud to offer such a very granular set of contracts because it helps our clients to achieve their sustainability targets and ultimately also our sustainability targets. And all these contracts have been launched based on customer demand. So, the large majority of them has traded, some sporadically or someone on a regular basis. This is always a process.

And clients come from different industries. They are utilities, banks, industry players, carbon funds, intermediaries, different kinds of clients being active. And of course, we will not stop here. We will continuously enhance our portfolio and develop the carbon markets and the wider environmental markets in the U.S. and also worldwide.

Next slide, please. So here, we are digging a little bit more into carbon. I just wanted to show you the main parameters of the contracts like of a typical carbon futures contract. Usually, this comprises 1,000 allowances, each representing one ton of CO2 equivalent greenhouse gases depending on the
program it covers. It's listed in dollars or euros. It's usually monthly contracts. It mainly has a main expiry in December, and they are physically settled via registries.

We at EEX Group engaged in 2005 for the first time in this market. We started in Europe with EEX, expanded to the U.S. market with Nodal in 2018. Since 2017, we are successfully cooperating with IncubEx which is a business development and marketing organization founded by the ex-climate exchange guys.

And worth mentioning is also that we operate large-scale primary market auctions for the E.U. Commission and the governments of all the European member states almost on a daily basis. And in these primary market auctions, we have sold more than four billion EUAs so far on behalf of the member states in the common auction platform and the states which opted out of the common auction platform. More than 2,000 auctions so far which resulted in more than €60 billion of proceeds which went into climate and energy-related purposes.

We also listed the global offset contracts
under the Kyoto Protocol like CER and ERU contracts. They’re project-based however not eligible anymore in trading Phase 4 in Europe, so you cannot count them anymore to reduce emission reduction target.

EEX will also enter the UK emissions market in the next few weeks. We will organize the sale of allowances in the new German Fuel ETS which is a separate emission trading scheme that covers additional sectors that are currently not covered by the EU ETS, transportation and heating. And we cooperate with NZX in the New Zealand primary market auction.

One important aspect as to why we are engaged on so many levels is that we always aim to create an ecosystem of services for our clients to combine the primary market auctions where allowance are first distributed to the market to daily asset optimizations with markets to hedging to trading, futures, and options all cleared and settled by a clearinghouse.

On the next slide, we'll have a look at the development of carbon market activity. So next slide, please. And so, what you see here is an overview of the market development in the past five years. It
shows the total market volumes, January 2016 to March 2021 by calendar month. North America in the upper part of the slide and Europe in the lower part. Futures in blue, options in green. As I said, these are industry volumes, not just EEX Group. We are not the market leader in this space, but still our EUA carbon futures in Europe traded at an ADV of 2.2 million tons or 2200 lots in 2020. And our OI stands at about 250,000 lots by the end of May. This represents about $15 billion.

I just wanted to show you the development of the whole industry in order to illustrate the overarching trends on the full scale. So clearly, we see interest in carbon markets has accelerated over the past five years. We saw roughly 2 million contracts traded in the U.S. That's about a third up from the previous year. And open interest doubled in the past two years. There's now about 1.1 million contracts.

In Europe, which is much larger by cap, we also saw increased trading volumes to about 11.7 million contracts and an open interest of 1.7 million lots. Maybe noteworthy here is the price development
of one ton of carbon dioxide in Europe. We saw that previously in the presentation by Hans Bergman, which was more than six-fold over the past five years to more than $60 per ton today. If you look into the graph, there's a spike in volumes in March 2020. This is related to the price drop of the first COVID lockdown.

Please move on to the next slide. This will also be my last slide in the presentation. So, while I already gave you an impression about the development of carbon markets in the recent past, let's also look into some trends for the future. I believe carbon markets are still in the development stage and they will become a major economic factor even more than today.

Just in the recent months, we have observed states reinforcing and even improving their commitment, we saw the UK launching their own ETS connected also with a higher ambition to tighten carbon emissions. But they will sign into law at 78 percent reduction until 2035. And also, Germany plans to achieve more ambitious carbon targets, so they want to go to net-zero by 2045, so five years earlier than initially planned and committed in the Paris Agreement.
We'll also see new ETS. Regional coverage will increase over time. We hear that Virginia is now part of RGGI and others are in the process to join the RGGI scheme as we heard from Ben Grumbles this morning which is very encouraging in my point of view. We also see new countries setting up ETS. You remember the map I showed you in the second slide. And, well, then the potential linkage of carbon trading schemes is discussed and is certainly an option in the future.

We'll see new sectors to be included: maritime sector, aviation sector, transportation. All this is relevant to increase the coverage of greenhouse gas emission schemes. A very important work can also be attributed to the voluntary carbon market segment, which is complimentary to the compliance market. It is not based on governmental policies but on a consensus among corporate entities to reduce carbon emissions in order to combat climate change.

So, all of these trends, and certainly there are many more, I would expect to shape the environmental markets of tomorrow, globally, as well as domestically. And I think ultimately, it's every
effort that counts. So, we at EEX Group are committed
to support the development with even more products and
services.

And with that, I'd like to conclude my
presentation. And thank you very much for your time.

CHAIR WIGGINS: Thank you, Christian. Derek?

MR. SAMMANN: Right, thank you. I'd like to
thank Commissioner Berkovitz for convening this EEMAC
committee. And certainly, the breadth of participation
across market participants in the industry in this
important conversation is critical at a point in time
when this has become more than just a political
conversation. This is an economic reality for all of
us. So really appreciate the opportunity to be part of
this conversation. Acting Chairman Behnam,
Commissioner Berkovitz, Commissioner Quintenz, and
Commissioner Stump, thank you for having us and giving
us the opportunity to talk about what CME Group is
doing in this space.

My name is Derek Sammann. I'm Senior
Managing Director of CME Group. I oversee our global
commodity portfolio, which is a combination of our
energy business, our agricultural products business, and our metals business. And I also oversee our cross-asset class options business. We're very pleased to be here this morning to talk through and update the committee and market participants here on CME Group's voluntary emissions offset initiative. We've heard a lot about the difference within cap-and-trade. We've just heard some conversation about the volunteer program. I want to share a little bit about what we're doing in this space and some markets we've just launched earlier this year.

Starting to -- so put this -- if you can just go back to the previous slide for me, please. I think you're on the very last -- there, yeah. Thank you. To put this in the broader context, environmental, social, and governance issues are increasingly important to our clients with CME Group as they are our investors and our employees. As a global corporate citizen, CME Group has responsibilities to all of these stakeholders especially in challenging the unpredictable times that we've just experienced in this past year. We aspire to transform the industry while always adhering to our
values.

Ultimately, it's about earning and strengthening our stakeholders' trust and positively making a difference. We're focused on partnering with our customers to develop and introduce risk management products that address the growing and changing environmental interests and needs of clients across financial and commodity markets and to help advance a more sustainable economy. We are constantly in conversation with our clients regarding products and services to meet their evolving risk management needs.

And as a global business operating in a complex environment, we understand the importance of developing both innovative and sustainable business solutions. Specific in the energy space, our company is designed to help global customers manage price risk in today's energy and agricultural ecosystems as these industries develop new technologies and other initiatives to meet market movement towards alternative sources of cleaner energy and sustainable agriculture.

Next slide, please. Turning now to emissions, exchange cleared emission contracts are
primarily focused on the mandatory or regulated markets. We've heard a lot about that so far today in the earlier presentations. These markets make a lot of sense for the cleared space since they've clearly -- they have clearly defined rules on how transactions are structured, who's subject to emissions cap, and specifics about what allowances can be used when.

However, the disparity in the various frameworks results in a lack of transferability or fungibility between different schemes. There's no way I can swap my California carbon allowance, for example, against the European Union allowance. This inhibited exchanges and market structure from structuring a more global carbon market contracts off of these underlying fragmented markets.

Historically, balance offset market is the opposite problem. Emissions reduction projects which generate offset credits can be located in any country in the world. While reputable offset registries have been verified issuing credits for decades, there was no overall framework to tie in the various regions, registries, and projects together to create a
standardized price and set of common attributes which are necessary towards an exchange cleared futures contract. Offsets are sourced today in the OTC market on a project-by-project basis. The decentralized and opaque nature of these markets has caused frustration and confusion for both buyers and sellers.

Next slide, please. Meanwhile, demand permissions offset credits has soared. The number of entities who have pledged to meet carbon-neutral goals by 2050 through the UN Race-To-Zero campaign doubled in 2020. There are now more than 120 countries, 2,000 businesses, and 700 cities that have made this pledge, which account for over 50 percent of global GDP. As institutions and governments make these net-zero commitments, they need time to determine how to shift to low or zero carbon business practices. Known solutions may not be economically viable or scalable from a technology perspective in the near term.

Offsets play a key role in making meaningful action while longer term solutions are developed. CME Group participates in the Taskforce on Scaling Voluntary Carbon Markets, which has outlined that the
offset market could increase 15-fold by 2030, faced
with overall carbon credits worth up to $50 billion by
2030. In order to scale in an efficient and
transparent manner, the Taskforce is called for
standardized exchange-traded instruments.

Next slide, please. The International Civil
Aviation Organization, ICAO, the UN specialized agency
adopted the carbon offset and reduction scheme for
international aviation known as CORSIA as a marketplace
mechanism to meet the ambitious goals of carbon-neutral
growth from an international aviation beyond 2020.
This is important as emissions from international
aviation is higher than all but five countries in the
world. The ICAO relies on guidance from an internal
group of experts called the Technical Advisory Board,
which is composed of experts in 19 different countries.

While the framework was adopted in 2016, the
ICAO only started to approve registries in March 2020.
The agency has approved eight voluntary carbon offset
registries and subsets of protocols within these
registries, which airlines can use to comply with
CORSIA. CORSIA's rigorous screening process,
international recognition, and adoption by the private sector even beyond just airlines makes it one of the best frameworks for voluntary emissions markets today.

Next slide, please. Based on the widespread demand for offsets and the approval of registries and protocols under CORSIA, CME Group has worked with Xpansiv Market’s CBL to launch the global emissions offset futures contract, what we call, a GEO contract. The contract allows buyers and sellers to make or take delivery of offset credits that meet the CORSIA standards from three of the approved registries.

Since launching in March of this year, there have been more than 200,000 offsets traded through this mechanism by a broad array of customers in both Europe and the United States. The contract has already enabled better price transparency out across the curve for voluntary emissions credits. Equally as important, it has jumpstarted conversations around the world about how to develope better environmental hedging instruments.

While the voluntary emission market is relatively new in the current commodity space, there's
nothing especially unique about the GEO futures contract. The GEO contract gives the same regulatory oversight, options for trade execution, counterparty risk protections, and delivery mechanisms as any other physically delivered exchange cleared contract. There's also no obligation to make or take delivery offset through the GEO futures contract. Like any other commodity markets, many firms either roll their position, exit close out that position, or undertake an EFP or exchange for physical prior to expiry.

There are a variety of reasons why firms plan to use the GEO futures contract to make or take delivery. As mentioned earlier, there's a substantial demand for entities to meet emissions reduction goals. A standardized contract that delivers defensible offset credits and is in high demand especially for firms navigating the space for the first time. Some firms may even take a hybrid approach of acquiring and retiring a mix of standardized offsets like GEO and project-specific offsets. Many firms have come to CME Group for other reasons to take delivery, off an exchange current emissions contract, structure carbon-
Next slide, please. Just as CORSIA has a phased approach where airlines use offsets in the near term as they transition to low carbon aviation fuels and more efficient technologies, producers and marketers are also looking at carbon-neutral commodities as a bridge to more sustainable, differentiating commodities. Whether it's in oil, corn, natural gas, aluminum, or steel, firms can act today by pairing offset contracts with traditional commodities.

This involves calculating the emissions associated with the production and transport of the traditional commodity, purchasing the corresponding offset credit, and then selling it as a structured carbon-neutral deal. There are many examples of these transactions in the cargo space whether it's carbon-neutral LNG, carbon-neutral crude, condensate, or nafta. GEO futures make it easier to acquire the offset component in the short-term and facilitate more effective long-dated hedging for bundled transactions.
in commodities markets, we expect differential for basis
markets to emerge over time which are anchored to a few
benchmark offsets contracts. Offset basis markets can
be focused on specific regions, product size, or
community benefits. This will also allow firms to
concentrate liquidity in the prevailing benchmarks or
secure a more precise hedge either in the spot market
or by using exchange for differential contracts. This
is common practice now in our crude oil markets today,
for example, where WTI futures trade over a million
contracts a day and grades such as Western Canadian
Select, Mars, West Texas Sour, and a Louisiana Light
Sweet all traded differential to the WTI benchmark.

From an exchange perspective, there’s no
silver bullet for the voluntary emissions market.
GEO futures utilize the best available international
framework with CORSIA, but it’s only the first step in
providing more efficient and transparent markets in the
space. We will continue to work with the leading
industry associations, governments, customers, and
environmental organizations to determine which pricing
instruments are most useful for the market to adopt for
the long term. The pace at which industry and
government is moving to address climate concerns is
unprecedented. This market looks far different in a
few years' time than it does today.

As a global marketplace, CME Group will
facilitate conversations, aggregate and synthesize
feedback, and advice on lessons learned to the
development of thousands of commodities contracts over
the past 160 years. Once industry consensus services
and liquidity strengthens, CME Group will provide a
venue where firms can execute voluntary emissions
contracts in a transparent and efficient way.
Ultimately, this will provide more certainty and better
risk management practices as customers move forward in
this global energy transition.

With that, again, I'd like to thank
Commissioner Berkovitz for convening this important
conversation, bringing this group together. And with
that, I will turn the meeting back to the Commission.

CHAIR WIGGINS: Thank you very much, Derek.
At this time, I'd like to open the floor to questions
and comments from the Associate Members on the
presentation. Do we have anyone, Abigail, who has indicated they wish to comment?

MS. KNAUFF: No one has indicated that they wish to comment, but if there's anyone on the line that would like to ask a question, please go ahead.

DR. PARSONS: This is John Parsons. I thought I'd put into the chat a request to ask questions.

MS. KNAUFF: Go ahead, please. Go ahead.

DR. PARSONS: Sure. So, I think my question is most likely for Mr. Sammann about the offset. Certainly, there have been a lot of challenges as we discussed in the first panel to the quality of offsets, whether or not you're truly getting the carbon neutral when you -- like when you talk about carbon-neutral LNG, it's not clear that these offsets are really producing actual reductions in emissions.

But my question has to do more with the exchange and the quality of the futures. We have experienced and I guess the label I would put on this is self-dealing. There's an organization deciding what counts as an offset, allowing various registries,
allowing various emissions -- types of projects to be included. We have experienced with this before with the credit default swap market where there's a private organization deciding about credit events and perhaps making decisions about credit events that serve their interests and are not the right decisions, so to speak, not a fair or unbiased choice about credit events.

And I'm wondering, how do you assure the quality of an offset market when the people who are establishing this market are the companies who need the offset and in the event of various things happening may choose to change what qualifies as an offset? How do we avoid self-dealing?

MR. SAMMANN: Yeah, it's a great question. And I think there's a pretty significant difference between the example you gave in terms of credit default swaps versus how this framework has come together.

I think one of the most important things to note is that the overall framework is overlaid and actually fits inside the UN regulation. And the whole UN framework has set the infrastructure for how these registries get set, how they get oversighted. And so,
the registries themselves -- and we actually for our contracts, we've got three individual registries of the eight accepted by CORSIA. These are within and approved and mandated and regulated by the United Nations themselves. That is -- we've accepted three of those registries right now.

And as that market evolves, we'll be looking at potentially adding additional registries over time. The three registries that we accept right now are the Verified Carbon Standards or VCS registry, the Climate Action Reserve, CAR, and we've got a third one, American Carbon Registry.

So, I think the difference is, and I think you make an excellent point, you've got to be careful who's doing the overseeing and who is actually participating in the market. So, in this particular case, the framework is a UN framework. It fits inside that oversight mechanism. Those registries are mandated there. We then look at those from our prudential regulatory point of view and determine which of those registers we feel comfortable that are most consistent with the kinds of needs that the products
that we're developing suit our customer needs.

So, we're not in a situation where the self-dealing argument that I think you raised, very rightly so, is not a concern in this particular case. So, we've separated by definition those who are managing an oversight of the registries themselves versus those that are doing the trading.

So hopefully, that provides some detail. I've got lots of detail we can provide on the individual registries themselves if you want to follow up on that, but I'm certainly happy to take any further questions on that.

CHAIR WIGGINS: Are there any further questions from Associate Members of the EEMAC? Hearing none, let's move to the Members of the EEMAC. Anyone who is a Member of the EEMAC have a question for the panel? Abigail, do you have any indication that we have any questions from the EEMAC Members?

MS. KNAUFF: We don't have any Members, but if we could just go back. I see just now one from Sarah Tomalty, who's an Associate Member.

CHAIR WIGGINS: Okay. Sarah, please go
MS. TOMALTY: Sure. Thank you very much for these presentations. It's -- these remarks are extremely important for us to be able to manage our risk, so really appreciate the fact that they're growing, and interest is growing in them. But given the global nature of the primary markets that underlie the futures products, how do we ensure that the quality of the credits that make up those markets? How do we ensure the quality of the credits that make up those markets and that those credits are not later invalidated?

MR. SAMMANN: So maybe I'll pick up the first piece. It's very similar to the comments provided by Dr. Parsons. When we look at the International Civil Aviation Organization, ICAO, which is that UN specialized agency, they've adopted the carbon offset. They've adopted the CORSIA framework overall. There's a market-based mechanism to meet that ambitious goal of carbon-neutral growth. So, when you look at the ICAO, that's got the approval of those underlying markets and actually oversight those markets.
So, I think I'm probably going to replicate what I just said a moment or two ago, the -- all of the products, all the offsets have to be applied into the registry, those registries themselves work and validate those, and those then go out to be potentially traded on different markets. We look at those under the UN framework to determine which of those registries we accept those into. And we've accepted these first three because we feel those are the most robust of the eight that have already been approved under the UN Framework. And we'll have to continue to adapt and potentially add more registries over time.

But I think it's the robustness of the registry oversight itself that's important. We feel confident in working and accepting the three that we have is the right direction. We'll be looking to add to that as this market evolves. But we rely on the registries themselves and then their oversight of those registries to be confident in the offsets that are granted and the stability of that offset regime over time.

CHAIR WIGGINS: Any other questions from
Associate Members?

MS. KNAAUFF: I don't think we have question from Associate Members.

CHAIR WIGGINS: I see we have one from Rob Creamer as an EEMAC Member. Rob, please go ahead.

(Brief Pause.)

Rob, we're not hearing you.

MR. CREAMER: I'm sorry. Can you hear me now?

CHAIR WIGGINS: Yes, we can. Please go ahead.

MR. CREAMER: Okay. Sorry about that. I was on mute on my phone as a duplicate precaution, so sorry about that. I forgot I had hit it. I was curious if the panelists might speak to their own views regarding the liquidity present in these markets. And really thinking about kind of how the market is evolving.

Certainly, it's interesting to me and I'm wondering if there are any constraints in the underlying market that are holding back liquidity from entering maybe more participation, but just wondering
kind of everyone's views on that. Thank you.

CHAIR WIGGINS: Does anyone on the panel wish to jump in to answer that question?

MR. BENNETT: I didn't get the first -- I don't know if anyone else, but I didn't get the first part of the questions.

MR. CREAMER: I was asking about the liquidity, how you evaluate liquidity within your markets, and whether you're pleased with the current state of liquidity, whether it's at a healthy level. Just kind of how you think about it, any constraints that may be limiting the desired level of liquidity that you'd like to achieve.

MR. BENNETT: So that covers any of our markets so carbon allowances and so forth?

MR. CREAMER: The exchange derivative allowances.

MR. BENNETT: Yeah, of course. So, liquidity means different things to different people.

How do we look at it? If we look at it in terms of the combination of bid-offer spread and depth of market, clearing each of the cap-and-trade programs
on different stages of their evolution, the EUA is the
largest and the most advanced and has the most
liquidity, has the tightest bid-offer spread, and has
the deepest market, you know, we probably trade 40 to
50 million tons a day in EUAs in a tight bid-offer
spread. And the reason why EUA is the tightest in the
market and the deepest is because it's got the most
diverse liquidity pool.

So EUA as the first contract was really
developed into a benchmark in its own right, so it
attracts a lot more diverse participation and,
therefore, a diverse view of valuation, and that tends
to encourage more liquidity.

MR. SAMMANN: And Rob, I'll jump in from our
side. You know, we just launched our GEO futures
contracts in March, and it's based on the underlying
spot market is traded on an Xpansiv CBL platform.
That's a market that just started about 15 months ago.

Now, what's interesting is we all know the
beneficial relationship that exists between spot
markets or underlying physical markets and derivatives
markets. And in this particular case, we've seen an
extremely beneficial impact, in that we saw a real big jump in the underlying spot turnover and Xpansiv CBL market in the underlying offsets market, literally the same week that we launched our futures contract.

And why is that? All the big -- bringing all the benefits of a regulated, standardized, well-organized, centralized market to connect to the underlying spot market, that's very much going to be beneficial two way impact there. So, we think that the futures market has already brought more folks into the markets looking more closely.

I will tell this group that next to probably Bitcoin, our single most client-engaged sales campaign, we've had has been on the GEO contract. We have had interest across the entire financial player spectrum from asset managers, hedge funds, pension funds, liability managers, banks, market makers, folks that aren't necessarily directly involved in this market, yet a lot of producers that are not even energy producers looking at ways they can use and adopt these GEO contracts to offset their risk.

So, we think over time, those early stages of
development of this market, liquidity I think we probably define it as you would; what's the entry-exit cost, how deep is that market, what's the top of book look like, how easily can you move sizes, how effectively are price fluctuations managed. Those are all things that we look very closely at across all of our markets.

I think we're at the early stage in the development of this rapidly evolving space. I think the important part is bringing in a fully regulated market infrastructure and ecosystem to expand participation, bring in some more natural sellers, and bring in some more natural buyers as well. And I think that's where we're going to see the beneficial impact of building futures markets on the back of an evolving spot market, but that actually bringing benefits to both of those.

So, it's early days in our contract for sure. And it's a different approach from the cap-and-trade programs that you've heard from the other panelists here. And I think there's a lot of interest that I think is going to evolve. And that's what brings
people into the market.

So, we're excited about the feedback we've gotten so far. Markets got a long way to go, but there's no shortage of interest for what this can mean to folks that are directly in the industry and those that are looking to use an offset like this to manage the global footprint -- carbon footprint they have whether they're an aluminum producer or a farmer.

We're having all of those conversations with commercial customers right now. So, the extensibility of a product like this is what's most exciting to our customers.

MR. SCHNEIDER: Yeah. And this is Christian. Let me just add to what Gordon and Derek shared with us, and I surely second that. Also, on the EEX, in particular, for the EUA contract, which is the most liquid contract in the carbon space for us as well, you see more participants pouring in liquidity in terms of depth of book and bid-ask spreads improving. But it's also the way the markets trade. It's not only outright trades. We see increasingly more time spreads traded, carry trade between spot markets and futures markets,
rolling of contracts, and structured trade coming in. So, this is for me also a sign for a maturing market going its way towards a really liquid contract. Thank you.

CHAIR WIGGINS: Thank you. Are there any other questions from our EEMAC Members?

MS. KNAUFF: There's not any other questions from the Members, but we do have a question from Commissioner Berkovitz.

CHAIR WIGGINS: Okay. Commissioner, please go ahead.

COMMISSIONER BERKOVITZ: Thank you, Dena and Abigail. Thanks. So, I just want to follow up on a question that is occurring in response to Rob Creamer's questions on liquidity. I have two questions actually. One is, Derek, you talked about this and you're mentioning your underlying spot market. The first question is, for these derivatives contracts, for all these derivatives contracts, you need a well-functioning spot market with price integrity in those underlying spot markets.

So, I'd ask each of the panelists your work
or your interaction or exploration, or how to describe
with the markets themselves and its primary and
secondary markets, the authorities that allocate the
allocations to ensure price integrity of the underlying
product derivatives that settle to.

And then the second question relating to the
liquidity issue. Is there -- and maybe, Derek, you're
alluding to this, but if you could expand, to what
extent are these parts being used by just by the
participants, buyers, and sellers, entities that need
allowances or desire offsets? Or are there liquidity
providers such as banks, dealers, traditional folks who
are entities that would participate as market makers in
other commodity markets like oil and energy and
agricultural products, for example, the bank, the
dealers, prop traders? Is the liquidity at a
sufficient level that, they would be coming in?

Would this ultimately be an asset class, like
an underlying spot market? And then the second
question is, what type of liquidity? Are we just
having hedgers, or are we actually having speculators
and market makers? So, thank you.
MR. BENNETT: Hi there. So yeah, it depends on which contract we're talking about. But as per my previous answer, the EUA market looks like any other benchmark contract, whether it's TTF, European natural gas contract, or some other key commodity benchmarks other than Brent or so forth, it has a very diverse group of participants that we are interested in.

The uniqueness of a cap-and-trade program is that it is a market that is set through policy and you have people -- you have naturals who have to participate in the program. So, it's a great source of natural liquidity because people have to buy allowances if they're short. But there's a whole host of participants in the EUA contract whether it's banks or non-bank financials. So, I would say it's as diverse as any benchmark contract that we have.

And what we saw in sort of post-2018 in anticipation of the introduction of the MSR, the market stability reserve, we saw this gradual increase in pricing in EUA. And the performance of EUA was in the financial press but even in the mainstream press. And so, you know, carbon as an asset class really started
to become -- stick its head above the parapet and
became a bit more mainstream. And that’s how the
trickle-down approach, whereby, you know, people are
saying, "This EUA contract is performing strongly.
What is it? And what else is there out there?" So,
then you get this trickle-down effect into things like
CCA and RGGI off the back of it. They're not as
diverse as an EUA, but certainly, CCA is catching up.
And RGGI is probably the least diverse of these two
contracts.

And we're seeing it in the UK allowances as
well. We're only two weeks in, and so it's very -- at
the beginning, it seems very much natural focused, so
people that have to buy allowances or have extra to
sell. But I am sure that that will evolve like our
other carbon contracts.

And in terms of spot versus futures, it's
sort of the same thing in terms of carbon. So, the
thing about carbon markets, we allow these markets as
you're complying once a year. So, the contract is
basically is named after the current compliance year,
so let's call it 2021. In Europe, it tends to trade at
December 2021. But that being delivered for the compliance period 2021 is being delivered in April 2022.

So, you don't need to buy a spot contract necessarily here and now because you're only complying in the future. But some people do buy the spot. It's called the daily future, and you pay for full contract value, and you get delivery of your allowance. Whereas the future is margined as you would expect a normal futures contract. And I think as Christian said that we do see a carry trade in most carbon markets where people are buying the spot and selling the future and generating the yield. So that's where you tend to see a lot of spot activity.

And then finally, in terms of primary markets, we, both EEX and ourselves, operate auctions for governments, and that's another great price discovery tool, but that's also the spot market because the government is selling their allowances, and they're being paid for today, and they're being delivered today.

MR. SAMMANN: And maybe I'll jump in on some
of the other pieces. So, Commissioner Berkovitz, you're asking about the spot market. So, in the case of the voluntary offset market, the GEO contract, think about that the market that is run by CBL as a spot market. That's just a transactional venue.

So, when you think about -- the carbon credit registries are actually the verification agents themselves for the physical credits, they're being approved by the UN agency that sets the standard. So, as we talked about the standards and set are approved by the registries that are in-turn approved, and that is by the United Nations entity that oversees that. So, think about the underlying transactional volume that's flowing through CBL on the spot side and then our future progress based on that. So, we know that if you track back the validity of the registration, the underlying credits themselves, that rolls up to that UN framework.

So that's kind of how that market operates. We've seen that. They've been operating for 15 or 18 months right now. In fact, their growth has been substantial. You asked a really good question in terms
of the market participants. There was a slide in my materials and Abigail if you wouldn't mind pulling it up. And the title of the slide is What Is a Carbon-Neutral Cargo?

And when you look on there, these are all public announcements, so we're not providing anything that has not been announced by these underlying entities themselves. But there's a table there under the title What Is a Carbon-Neutral Cargo? that lists the eventual buyer and the eventual seller of that underlying contract. And you'll see for 90-plus percent of those right now, those are the underlying commercial entities themselves. There's Shell, there's Mitsui, Total, Chinese entities, and Toho Gas, et cetera.

So right now, and -- but remember, this is a futures contract. So, the initial buyer and the initial seller, when it goes to physical delivery, you don't know how many transactions and maybe a financial player that took place in between there as well.

Where our goal is to have started with the most robust, UN-enabled framework at the outset, the
one that the industry is coalescing around, making sure those products most effectively represent the underlying risks and actually the opportunities to monetize some of these offsets that are out there. And under the UN framework that makes that the right global framework for being able to have fungibility transferability between regions across jurisdictions, state national, local, and otherwise.

The participant pool over time. We fully expect as we've been doing for 160 years, expand that ecosystem of participants. That's where the best possible outcome for everybody is, where you have commercial end-user, open interest holders alongside financial participants and players. And with that -- that's where I've actually seen the most interest from asset managers and hedge funds saying, "Hey, we've long thought about this. We haven't really found a way in. We're not part of cap-and-trade program because we're not the underlying entities themselves, but having participated in this market in a way that's well regulated, and it has all the safeguards of the CFTC jurisdiction."
So those are the feedback pieces we're getting from customers on the client-side, then how do we become a part of this? So that table and if it doesn't come up on the screen, that's fine. It's in my materials under the heading, What Is a Carbon-Neutral Cargo? There's an opportunity to see what today's participant pool looks like. In our experience, that's going to look very different in three to five years' time. You're going to see more intervening financial players participate along that chain. You might end up with still largely the original seller and the final buyer might end up being financial or commercial participants. But that's a function of how well we can scale the community and participant pool.

CHAIR WIGGINS: I think we have questions from the Chairman and from Commissioner Stump.

Chairman, would you?

ACTING CHAIRMAN BEHNAM: Commissioner Stump can go first, please. I'll go after her.

COMMISSIONER STUMP: Thank you. My question is for Derek. I -- this is just -- I know the focus of today's meeting is energy, but I have heard from
various agricultural interests, who themselves are designing voluntary solutions in the primary phase. And some of them actually maybe offset issuers based upon the manners in which they're able to capture and contribute to carbon reduction.

I'm just being curious. When we talk about UN standards-setting -- UN-recognized standard-setting bodies such as CORSIA, have -- has there been interest or discussion with agricultural end-users as to what type of things should be recognized in that space? And perhaps not given that agriculture hasn't been the focus of the mandatory programs, but I'm just curious more than anything as to -- if we know if those conversations are ongoing with agricultural end-users or agricultural anyone who's interested in the agricultural markets from that perspective.

MR. SAMMANN: Yeah, you know, Commissioner Stump, that's a great point, and I kind of alluded to this in my prepared remarks. Given the fact that we run the world's largest agricultural market and actually in the metals market as well, we have a lot of natural interest in the commercial participants in both
of those markets. I'll give you two examples.

All of the ABCDs, right, the biggest agri-food business entities on the planet, have been deeply engaged with us on this because they're pretty far down their own path, whereas carbon sequestration efforts or other ways in which they either are emitters or in some cases are the natural longs, the owners of these offsets themselves, as they're looking to do a few things. Or we have in some cases the ABCDs themselves have access to or made purchases in the space that create those offsets. They want to know how they can go about using those not only for their own business but maybe to be participants and provide an offset against, say, an energy producer.

So, the short answer is yes. And there are a handful of within that group of four or five in that group. There's two or three that are most aggressively pursuing this because they'd like to be involved earlier, sooner rather than later in this market as it evolves.

There's another set of participants from the mining side, mostly from the base metals side, less on
the precious metal side, because you know how energy-intensive mining is for things like copper and aluminum. And they said, "Listen, this directly helps us down the path to our own carbon-neutral commitments because what we do is a very energy-intensive business. How can we find a way to use these products to offset? In the same way that we use the example -- the materials for a carbon-neutral cargo, there's carbon-neutral aluminum. There's carbon-neutral corn. There can be carbon-neutral copper. And those are the conversations we're having.

Since we've run the benchmark markets in those asset classes, it's been -- that's why this has been such a deep and deeply engaged sales campaign over the last three months because customers can see a potential immediate need in their own business to meet their own commitments in carbon neutrality. And they see if they're able to do that on the same exchange with the gender primary hedging for their natural underlying exposure.

So, the opportunities and we all talk about ecosystems and the most efficient way to bring networks
of market participants together, that's the
conversation that we're having. So, I gave you the
long answer. The short answer is yeah, both from the
agricultural side and from the industrial metal side of
our own customer base, saying, "How can you use these
products?" And they're both pursuing and getting
engaged in the markets right now. But also, would like
to see these markets continue to evolve with more
liquidity, more term open interest out along the curve.
And that's just the market maturation process. And
that's what we do. We build markets and bring
communities together. So, I think we'll see more of
that over time.

COMMISSIONER STUMP: But are there
international bodies that are recognizing or focusing
on recognizing the -- or validating perhaps the types
of things that would qualify as offset in those spaces?
And Derek, this may not be a fair question for you,
that's not your job, but I'm assuming that you're
looking to those folks as you would in the energy space
to help develop the market.

MR. SAMMANN: Yeah. And again, the answer
comes back to the registry. So, what happens is if somebody has something they think is an offset, they actually go through an application process through one of the registries themselves. The registries themselves look at that, they review the application. They determine yea or nay. Those registries, those eight that I referred to under CORSIA that fall under UN mandates, so that is the kind of uber supranational entity that provides the overall frameworks for the oversight of the registries. Individuals like -- I'll pick a -- I can't pick an individual name.

A large agricultural company would say, "Hey, I think I've got this part my business that I think qualifies as an offset." They would go to one of the registries and apply for that, and then they'll run through that process. And that's a very thorough vetting process of within the registry itself oversight by the UN.

So, I think the answer that you're looking for is yes, those are globally accepted standards. Now, that was birthed originally out of the aviation industry, but those standards are looking applicable to
across all industries. An offset is determined to be
an offset by the entity that the UN approves it to be.
So that's the process, I think, that we're pursuing
right now.

COMMISSIONER STUMP: Thank you.
MR. SAMMANN: Apologies.
COMMISSIONER STUMP: No problem. Thank you
very much.
CHAIR WIGGINS: Chairman Behnam?

ACTING CHAIRMAN BEHNAM: Thanks, Dena. No, I
won't -- this has been a good Q&A session. So, in the
interest of time, because I know we're way over, I'll
just make a short thought because my questions have
largely been asked and answered. But I think the
points about the underlying market are really
interesting and difficult. And, you know, as was
mentioned, the fact that you have non-end users, non-
speculators trying to get exposure through the futures
is not unlike what we're seeing in the Bitcoin or the
crypto space because of that trust, because of that
regulated space.

And I think given the scope and the scale and
the ambition with the carbon markets and the offset markets and what everyone's trying to achieve in terms of climate change, it's going to be important to really make sure that these registries are valid and credible. And I know certainly CME does its homework to ensure that their futures are based off of credible underlying cash markets. But, you know, these cash markets are essentially OTC derivatives markets. And I think it's going to be interesting as time goes on that we as CFTC and other government regulators, as this public-private partnership evolves, play a good role because we've learned a lot of lessons in the crypto space. We've learned lessons in the RIN space.

Given the ambition and the scale, we have to make sure we get this right because the outcome and the deliverables are really what we're trying to achieve.

So, all in there, great panel, and back to you, Dena.

CHAIR WIGGINS: Thank you very much. And I am now going to turn this over to Abigail. Abigail?

MS. KNAUFF: Thank you, Dena. At this time, the EEMAC is going to take a brief break. EEMAC Members, Associate Members, guest panelists, and the
Commissioners, please keep your phone on mute. Make sure your WebEx is on mute and turn off your video during the break. We'll return at 12:35 p.m. to begin the next panel. Thank you.

(A luncheon recess was taken at 12:23 a.m.)

AFTERNOON SESSION

(12:37 p.m.)

Ms. KNAUFF: I would like to call the EEMAC meeting back to order and turn the agenda back over to Dena.

CHAIR WIGGINS: Thank you, Abigail. Our third panel today is going to provide a survey of perspectives on carbon derivatives and the underlying markets. We're going to hear from Evan Ard who's an Executive Managing Director of Evolution Markets, Inc.; Suzi Kerr, the Chief Economist at Environmental Defense Fund; Erik Heinle, the Assistant People's Counsel at the Office of the People's Counsel for the District of Columbia.

And I will also participate on this panel as the CEO of the Natural Gas Supply Association along
with Annette Nazareth, the Senior Counsel at Davis Polk who's representing today on behalf of the Taskforce for Scaling Voluntary Carbon Markets. And then finally, Matthew Picardi, the Vice President of Regulatory Affairs with Shell Energy North America, who is speaking on behalf of the Commercial Energy Working Group.

So, with that, I'll turn it over to Evan.

MR. ARD: Great. Thanks, Dena. And also, thanks to Commissioner Berkovitz for inviting me to speak, Acting Chairman Behnam, Commissioner Quintenz, Commissioner Stump as well, as the EEMAC Members and Associate Members for convening this discussion. It's been a great discussion so far. I will try to not go over some of the same ground that was covered by the panels before me, particularly the last panel with the -- with that great discussion from the different exchanges.

Just quickly, Evolution Markets is an introducing broker in global energy and environmental markets. We've been involved in carbon markets since our founding in 2000 and through the different
iterations of the markets. You've heard a lot of the history from previous speakers. We are facilitating transactions on behalf of our clients and futures, but as well as in the OTC market.

And for the presentation today, I wanted to focus strictly just on the OTC market perspective, give the committee and the Commission a few ideas in terms of how the carbon market has evolved and continues to evolve in some of the overlapping issues that you might want to think about going forward.

So next slide, please. Thank you. So again, I think it's important to, when we talk about the OTC market, to give all the participants, you know, in the meeting today an idea of kind of where the market's going and also present some ideas on what the Commission might want to think about as it looks at the future, you know, regulatory action or oversight, in particular, in carbon markets. You know, a lot of ways the OTC market and carbon has evolved like many of the other environmental or energy markets, you know, and it is a precursor to what goes on in some of the regulated environments, but there's a lot of differences as well.
So, I figured we could go over some of that. You know, obviously, the carbon market and the OTC market has always been an incubator. The market has traded -- the different regulated markets have traded OTC well in advance and then trading through the regulated exchanges. It's no different today than it was when we first traded the European Union allowances. I think we facilitated the first trade maybe 18 months before the program even started. It allowed counterparties to understand what the potential trading mechanism was going to be, what the deliver -- how the delivery was going to be managed. Obviously, price discovery was part of that as well. And even just some of the taxonomy and the vernacular about how the market operates was, you know -- is kind of worked out in advancing the OTC market. We also facilitated some of the first transactions in California as well as in RGGI. Again, those are well in advance of the markets starting as well as in advance of them, you know, trading on the regulated exchanges. And the market participants that you would
see early on were compliance entities but also a lot of dealers, other financial entities that were providing risk management services. The OTC market has also been a tool for innovation and risk management. They have, you know -- participants have used the OTC market to tackle a lot of the difficult, you know, risk challenges that carbon markets present. You know, options obviously, started at OTC a while in advance of the trading on the exchange. And you have a lot of dealers who were looking to help companies manage their compliance risk. And then, you know, there have been the associated price risks and environmental risks that are associated with those positions.

In addition, the offset market presented some unique challenges, particularly as it relates to the structure of the underlying -- as the underlying product was being sold. In some cases, you know, you wanted participants to guarantee the delivery and you saw a lot of these structures that were created in the OTC market eventually adopted for exchanges when they listed contracts. CCOs in particular were a market that the OTC market was particularly helpful in
developing in part because of the authority of California to invalidate credits on carbon offset credits that were generated and used by entities for compliance.

So, the OTC market created different structures and different tiering of risks that was associated with the CCOs. And those markets traded for years OTC before there was an exchange-traded contract. It gives you a good idea of how the OTC market can create some innovation and ultimately gets adopted by the wider, you know, regulated market environment.

Next slide, please. So currently, there is an active OTC derivative market for carbon. We heard from previous speakers that with the exchanges, you know, obviously, there's a robust, futures market as well as an options market. The market -- both those markets started OTC. Most of the liquidity migrated over to the exchanges, but there's still a great pool of liquidity underlying these markets, particularly in the established compliance program.

You know, largely they're dealer-to-customer transactions that are happening, the structure of those
trades largely mirrors the exchange cleared market. But you'll see some very specific and bespoke transactions that take place for -- you know, to address specific client needs. And obviously, the exchange-listed contracts provide a venue for hedging of the OTC positions that, you know, these dealers or some of the other market participants might take, you know, in the OTC market.

There's also a very mature OTC market for spot and forward delivery. You know, because of the nature of carbon allowances and carbon offsets, delivery is easy; it's effectively electronic delivery. If you take physical delivery, it's just the movement either in a tracking system or in a registry from one counterparty to the next. You would see a lot of OTC forward transactions that take place, you know, in the netting of positions, you know, sometimes under ISDA agreements and other type of event agreements and other type of agreements between counterparties.

There's also new carbon trading platforms, some of which have been alluded to already, including Xpansiv CBL markets. There's also Carbon Trade
Exchange as well as the AirCarbon Exchange, different venues for effectively spot delivery. And they provide a great pool of underlying liquidity for trading for -- you know, obviously, for immediate delivery, sometimes for forward transactions and a good venue for transparency. And for the, you know, like I said, there's an incubator for the development of products before they migrate into an exchange environment.

Next slide, please. We had a fair amount of discussion already this morning about the carbon offset market. This market is tailor-made for the OTC. There's just a lot of moving parts, in particular -- you know, and a lot of unique risks that are associated with not only the market but also with individual projects. And the ecosystem that's built up around it is diverse. And so, you know, the OTC market is, you know, it's done a good job in terms of, you know, bringing all these disparate parties together and all these disparate risks together to offer transactions.

Largely, we're seeing in the carbon offset market spot trades for physical delivery. There is a fair amount of forward purchases of long-term strips of
credits. And then obviously, we have exchange-listed products, particularly in California, for offsets as well.

The one thing I think is important to note is that despite the fact that there are common methodologies and that there are registries that are internationally recognized that, essentially write the rules for how you reduce carbon emissions and then the rules for how those are verified, validated, and potentially issued. And when they're issued, how they move between one counterparty and another.

There's still a lack of standardization particularly for anyone who's on the buy-side of that transaction, who's buying carbon offsets to potentially offset their own carbon emissions to meet net-zero or carbon-neutral commitments. It is truly like the art market. The beauty is in the eye of the beholder. Transactions occur with wide price disparities because of carbon offsets may, you know, may -- one party may desire a certain geography or product type or may want products or projects that have additional ancillary benefits for the environment or for social good, and
they pay more for those than another party would.

At the same time, you can see a landfill gas project in Latin America potentially trading to a discount to a landfill gas project in Africa, for instance, just because the buyer sees more value or wants to tell the story of investing in a particular geographic area or in a particular project type.

And because of that a lot of the managing of the risk occurs through the contract -- through contracting. You know, there's optionality built into contracts which relate to volume and as well as price. And, you know, a lot of times you'll have unit contingent transactions where, you know, the buyer will buy up to a certain matter. All the credits coming from a project, if and when those credits are created, to kind of manage the risk associated with the performance of a particular carbon offset project.

And because of that, you see a lot of counterparties taking -- managing the risk, you know, in large part through -- also through diversity. So, they're going to invest in carbon portfolios that are going to have, you know, being different methodologies,
be across different geographies, be in different
vintages, and vintage being the year in which the
carbon emission was achieved.

And then you also see further kind of out the
chain, you'll see counterparties who are sharing the
risk associated and also sharing the upside with the
seller by co-marketing. Some might buy offsets for
future delivery at a set price. And then sharing any
future upside of an on-sale of those credits with the
issuer or with the project owner which is becoming more
common these days.

And you'll also see for new project
development that there's a certain continuum in the way
that these projects are developed, that is indicative
of some of the risks that are out there and where the
market itself has stepped in to address these risks and
where there's more work to be done.

So, the offtake agreement would be, you know,
the purchase of multiple-year streams of offsets from a
project that's going to reduce carbon emissions
wherever it is in the world in whichever registry it
happens to register on. And that offset -- the offtake
agreement, similar to what happens in renewable energy markets, can then be turned around from the project developer to a bank or to some other financial entity to achieve project financing, if necessary, to put the steel on the ground. The capital expenditures necessary to start the project.

And then naturally after that, whoever's involved from a financial point of view is going to want to engage in hedging. And this is where the market is still evolving. The managing risk of contracting takes you to a certain point. And then beyond that, you know, there's obviously hedging instruments that are necessary out there. And right now, especially for carbon offsets, you know, there's currently few, you know, viable products out there to do that although they're being developed as we've talked about, from the CME and from some other venues.

Can you go to the next slide, please? In terms of what this committee and the Commission should think about the carbon markets going forward, I think it's important, and this has been alluded to, you know, previously, to try to take a step back and look at the
holistic impacts of climate change on energy and environmental markets, not just the carbon markets. And this is something that the climate-related risk subcommittee of the Commission has already started to address.

And extreme weather events, you know, can obviously lead to price volatility. They can raise some market structure issues. And I think more importantly, in the long term, is they are -- you know, they are leading to shifts in liquidity, you know, the shift to carbon neutrality. In some cases, you know, net-zero commitment is leading to a shift in terms of where liquidity is based in a lot of energy and environmental markets, you know? And that includes not only the underlying commodities but also the venues and risk management products that come off the back of that.

A good example is the shift in liquidity in power natural gas markets in the States, you know, because of the shift in generation mix away from coal to natural gas and with more renewables on the grid. There's more liquidity and more in the basis markets
than there was previously, especially relative to the major hubs.

And then we're also seeing an emergence of global LNG markets which is, you know, a direct response to the climate challenge as people will use natural gas as a transition fuel to a true low-carbon and net-zero economy. And you're also seeing the emergence of renewable energy certificate markets which are regulatory tools to enhance — to make renewables more competitive as they, you know, continue to develop and get scale here in the United States. You're also seeing it abroad.

There's also emerging trading strategies that different counterparties are putting on relative to climate change that's going to kind of amplify these trends going forward. We have conversations with clients daily, be they banks, companies with national positions, hedge funds that are looking at climate impacts on a global basis, and how it impacts their putting trades on that are relative to those impacts will show the short term and long term.

And I think it's important to note that
carbon pricing is going to play an important role going forward. You know, in all the global commodity energy markets and certainly some of the other global commodity markets, as carbon gets priced in either from a regulatory perspective or just simply from end-user consumers pricing in carbon as part of the externalities of using fossil fuels.

Next slide, please. So, for my last slide, I wanted to highlight a bit in terms -- if we're kind of forward-thinking from the Commission's point of view. And, you know, encouraging everyone to look at this. So this has been discussed a little bit previously more of an intersectional approach in terms of how we look at energy and environmental markets.

There is, you know, a robust carbon market as we've discussed. Obviously, energy markets are robust as well. But now, we're seeing how these are - there's an interplay between these and there's new products that are being developed that are addressing a lot of the underlying environmental issues that we're talking about with climate change, whether it be on a voluntary basis, companies taking on net-zero commitments and
turning to their scope one, two, and three emissions in
order to, you know, manage that and meet net-zero,
carbon-neutral commitments, or if it's, you know, on a
policy level as well.

So, from the carbon market, which we've
already talked, there's compliance markets -- there's
new compliance markets being proposed on a global
level, almost on a monthly basis at this point. You
also have different U.S. states that are looking at
taking approaches, and they may join in regional
approaches in California or in RGGI, or they may take
on their own carbon pricing regimes that are outside of
those particular approaches.

And increasingly, all these policymakers, as
was discussed in that first panel, are looking at
potential linkages as a way to create efficiencies and
to promote carbon emission reduction targets across
different sectors or across different geographies.

The global carbon offset market is growing as
we've all discussed. We anticipate that we're going to
see significant amount of growth over the next five
years in that market. And the policymakers are
starting to look to the carbon offset market again, as a way not only to reach carbon goals to do it on a cost-efficient basis. And you're seeing now a discussion within the EU about potentially, again, bringing carbon offsets back into the program potentially in future years when the carbon offset targets in the EU get more strict. California already has a robust program with carbon offset usage limits, and that will continue going forward.

And then lastly, on the international level is discussion of, you know, potentially global carbon markets coalescing around the Paris Agreement and different mechanisms under the Paris Agreement to provide for increased ambition as well as meeting, you know, globally, nationally determined climate goals. So particularly, you'll hear people refer to Article 6 of the Paris Agreement, which allows for the international carbon market to formulate.

And, you know, also, there's a fledgling market that starting from a carbon offset -- from a sustainable development point of view. You're also seeing, as people talked about, bundling of carbon
offsets with fuels. And lastly, there's this separate market that's, you know, coming together that's differentiating fuels that are -- produce less carbon intensity than others. And again, this is all going to have an impact on the underlying energy commodity as well as the environmental market itself.

So, with that, I appreciate your time, and that's it for my presentation. Thanks, Dena.

CHAIR WIGGINS: Thank you, Evan. Suzi, I'll turn this over to you.

MS. KERR: Thank you very much. So, the interaction between cap-and-trade markets and financial markets is a critical one to enable the efficient flow of capital to low emissions investments in response to policy. And as they grow in size and value, cap-and-trade markets can also create some risks. I'm really grateful for the opportunity to discuss these issues today with such a knowledgeable group. So those of you who are less familiar with us, the Environmental Defense Fund is very proud of basing all of its advocacy on strong economics and science, and we work closely with many private companies.
Next slide, please. I want to touch on four issues, getting back to really the fundamentals. So first thinking about what really drives cap-and-trade prices and particularly focusing on the extent to which those are actually driven by policy. Second, I want to discuss how cap-and-trade prices lead to clean investment and some of the challenges in that connection. Third, I want to touch on a very big issue recently around environmental justice and equity concerns and what that can mean for risks around cap-and-trade prices and markets. And finally, discuss three big changes that are coming where there's a lot of uncertainty, but they could have really enormous impact on the accessibility of particular types of units and on the prices of those units.

Next slide, please. We're going back absolutely to basics. What's driving carbon prices is of course a mixture of the demand and supply. So the demand for reductions or the demand for allowances in a compliance market is essentially the mirror of a marginal abatement cost curve. And it depends very much on how much emissions would have been in the
business-as-usual case or when there is no regulatory pressure to reduce. That's a very highly uncertain thing, but that's a critical input.

Next slide, please. So, the second piece of the puzzle is the cap. And that is the supply of the allowances set entirely by a regulator. And for the price in the market, because these units are bankable across periods, you can trade across time periods, it's not only the current cap that matters but also the expected future stringency of the cap. If you expect the cap to become tighter in future, you'll hold back now and save some of those units. And the -- because you can bank those units, unanticipated changes in expectations about the future can have quite dramatic short-term impacts on prices.

The next slide. So, the stringency of that cap is dependent on political will. That political will in turn depends in part on perceived feasibility of reductions and costs. It also depends on international diplomacy. So it depends on what's happening in international agreements but also what's happening more generally in international climate
negotiations and culture among companies even. And sometimes, it's not only the stringency of the program that is at stake politically, but even the existence of the program, and of course, that would have a very dramatic effect on the value of the units. So, if the cap either becomes or is expected to become more stringent, that's going to push up the prices.

Third slide. Next slide, sorry. The other really important driver which is unusual relative to purely private markets is that other climate mitigation policies are very important in terms of the demand for allowances in the market. If there are other climate mitigation policies such as requirements for clean cars or innovation support or building of critical low-emissions infrastructure, that will reduce the emissions even irrespective of the cap-and-trade program, and it may reduce the cost of further reduction.

So, it shifts that marginal abatement cost curve, and that shifts the demand for allowances, lowering the price of allowances in the cap-and-trade market. So, when you're thinking about the prices in
cap-and-trade, you need to be considering the whole portfolio of policies.

Next slide. So, the sense that there's a lot of uncertainty in this demand means that there's a lot of uncertainty in the cap-and-trade prices. And that uncertainty comes from the policy but also from the normal sort of market activities and the changes in technology, demands for fuel, et cetera.

Next slide, please. In part include concern about dealing with that uncertainty because we find it so hard to predict what those marginal abatement cost curves would be. Nearly every cap-and-trade program now has some sort of price management. So, I've sort of drawn one possibility which is a price band, a floor in the auction, and a price ceiling so that prices can't get too low, and they can't get too high. And this provides some protection also against speculation that a market might actually be about to collapse when the regulators don't want that speculation to come true. So altogether, there's a number of policy instruments that are seriously driving the prices in these markets.
Next slide, please. So, as well as normal market sectors, policy, politics, and even international diplomacy are driving these prices which means they are creating a very specific form of risk for asset prices from these markets.

Next slide. So just to look at the EU experience, this is the experience over the first pilot period and the EU system since then. There's been enormous variation in these prices. There's a lot of short-term volatility, but those long-term changes are to do with changes not only in the global economy but also very much an expectation for policy stringency. Other carbon markets such as the New Zealand one, which I was heavily involved in creating, show very similar patterns of prices over that long period in time. So, what does this mean for investment?

Next slide, please. The key purpose of cap-and-trade programs is to influence investment, low emissions investment, avoid the high emissions investment. We want investors to be able to share and lay off risk so that they can invest efficiently and so they can invest as fast as we need them to do.
Essentially, our cap-and-trade allowances are a form of currency that is created by the regulators. And what we're wanting to do is to be able to trade that currency, hedge that currency, et cetera, in such a way that people can seamlessly make these trades.

So, I think there are some fundamental questions here about who has the best ability to trade with. And I wonder, I'm not an expert in financial markets, but in some aspects, this is a little more like foreign exchange markets than some other product markets. I also think that policy uncertainty is a little different from concerns about volatility in markets. And the ultimate goal is to reduce the policy uncertainty -- manage the policy uncertainty in maybe like monetary markets, then have some changes in the way we govern the creation of this currency of cap-and-trade allowance units.

Next slide, please. So, another issue that has become very important recently is environmental justice and equity concerns. And this takes a number of different forms. It can create policy risk, and that policy risk then creates price risk.
So, the first cause of concern is around the use of market solutions in general for dealing with climate policy. And those concerns are several. So, there's concern about procedural approaches, loss of local control. When we use markets to address problems, there are distributional concerns that carbon pricing would have an impact on workers on consumers. Of course, it also has impacts on asset owners. And there are concerns about market manipulation and poor management of markets.

It isn't clear that these concerns and challenges are unique to cap-and-trade, but they are coming up very strongly in that context. There are some solutions to this that are being demonstrated by some of the people on this call: more inclusive governance, some simultaneous policies to manage local benefits. But we're still experimenting with those approaches. Washington's cap-and-trade system is an interesting one where they've got two new approaches to deal with a set may make cap-and-trade more acceptable. We also learned a lot about guardrails to avoid the market manipulation. So, price protection, auction...
purchase limits, strong registries, et cetera.

Next slide, please. The other concern that can arise around equity, and this is something that we have seen in New Zealand markets, which involves some very small forestry players who are part of our cap-and-trade market, is that when you have small sellers, they can be exposed to unnecessary risk. And because these markets are complex, not many people understand them, it's very easy for people to fall prey to snake oil merchants.

This was particularly true in the nature-based solution space. So, as we move more into that space, with either offsets or regulatory programs, we might need to pay more attention to this. One of the unusual things about nature-based solutions is that you can create liabilities because you're storing carbon in soil or in forests. And if that carbon gets released, there can be a liability associated with it. There are again approaches to dealing with that that are developing, but those are still an area where I think more development is needed.

So, in summary on the equity issue, they
still pose real risks of the existence of and a reliance on cap-and-trade markets, particularly in the United States. And therefore, I think they constitute potentially a major source of price risk.

Next slide, please. So, going forward, there are three main areas where I think we're going to see very big changes. The first is that we really hope that prices are going to rise. We've seen dramatic rises in the EU and New Zealand markets recently. So, when we're not successful at getting these markets working with more realistic prices, we're likely not be solving the problem.

The second is that international carbon markets are evolving. It has been happening for 25 years. I've been working on it for 25 years. It's still a space that is not particularly clear. But as they do evolve and we have to make them work, that's going to affect domestic cap-and-trade prices, but it's not clear how that's going to happen, and that will need to be watched closely.

The third is the surge in voluntary markets and how those are going to operate alongside cap-and-
trade markets. And as cap-and-trade markets expand, which they are doing rapidly across countries, expanding their scope, that's going to really impact on the role for the voluntary market.

And just to give a couple of examples, there's a new initiative in the U.S. called the Climate Vault, where voluntary markets are buying allowances out of compliance markets because they are buying out of a very strongly credible system with a real limit at a statewide level. That's an option that could be attractive for voluntary markets. They've done very similar things for the last 10 years in New Zealand, buying out of the compliance market to meet voluntary market needs.

So that's a direction that could evolve further. And what we may see is that as the compliance markets really get established, the voluntary ones will shrink because the corporate actors will be -- have these very strong compliance options to use instead. And that could conceivably happen very rapidly.

Also, the desire for standardization, which is really critical, could invalidate many of the
current credits that are coming out on the market, not
the really strong ones, in the short term from people
like VCS and so on, who've been discussed earlier, but
from some other smaller suppliers who are springing up
very, very rapidly.

So, I think there will be a lot of risks if
we have the transition from voluntary to compliance
markets and from domestic to larger-scale markets.
This could lead some types of credit to lose all the
value, and it could lead prices to be driven by new
political forces.

A particularly critical issue we do need to
watch is the problem of integrating compliance and
voluntary markets because you can't count emission
reductions twice in a way that suggests that you are
creating climate benefit twice. You could use the same
reduction to meet a U.S. target and a company target,
but you can't claim that both of those are independent
reductions. They're happening in the same activity
from the same jurisdiction. And we still don't have
models to how those they're going to fit together as
more and more countries have really solid, nationally
determined contributions and commitments under Paris
that they began to comply with.

Last slide, please. So, in summary, cap-and-trade markets are created by regulation. They're a regulatory phenomenon. So, the politics behind those creates price risk. The second, supporting clean investment is a central goal. And that makes managing that policy-driven risk really key. And if market processes and initiatives like that can help with that process, that would be very helpful. Third, equity and avoidance of manipulation are possible and very important, but they do require more attention than we've given them in the past.

And finally, I think these markets are really growing fast and prices are likely to rise. And also, the shape of the market is evolving fast. So, this will need to be an ongoing engagement to make sure that the way that the derivatives markets are handled keeps pace with those underlying changes. Thank you very much.

CHAIR WIGGINS: Thank you, Suzi. Erik?

MR. HEINLE: Thank you, Dena. My name is
Erik Heinle. I'm with the Office of People's Council for the District of Columbia. I want to start just by thanking Commissioner Berkovitz, the Commission, Dena, Abigail for including me in today's excellent discussion and more importantly, making sure consumers have seat at the table as these important issues are addressed.

My office represents ratepayers in the District of Columbia with a focus on retail ratepayers such as individual residential consumers and small businesses. Folks who otherwise would not have a seat at the table in discussions regarding energy policy either at the retail or wholesale level. In addition to ensuring affordable rates and reliable service for district ratepayers, my office is charged with evaluating how certain energy policies impact the District's ambitious climate and clean energy goal. Thus, we consider market constructs like carbon markets. It's with the goal of most cost-effectively facilitating the energy transition to clean, carbon-free, reliable electric service.

With that framework, I'd like to speak to you
about how our office, DCOPC, approaches carbon pricing, while noting that many other consumer advocate offices, the primary focus remains on ensuring the lowest possible rates for their consumers regardless of resource type.

Finally, the usual disclaimer that the comments shared here for discussion purposes only and don't necessarily reflect the policies or positions of the People's Counsel on any specific issue.

If we could jump to slide three, that would be great. Go back one please, actually. Great. Appreciate it, thank you. So, the old sort of consumer advocate adage used to be “reliability at the least cost.” And under that, “price is king as long as it does not impact service reliability.”

However, as states new jurisdictions, like the District, enacted clean energy and decarbonization goals aimed at limiting and mitigating the impacts of climate change, it may be time to rethink this perspective to cost-effective reliability and sustainability.

Here, cost is so critical over resources with
attributes that help reach reliability and sustainability targets have value outside the immediate energy and capacity they generate.

Importantly -- and this is, I think, Suzi Kerr did a great job of highlighting the environmental justice concerns. But we must always be mindful of the impact on low and moderate ratepayers of all these policies. I mean, economically, diverse jurisdictions, like the District, we have ratepayers desire and can afford clean energy at almost any cost, and ratepayers for whom any increase in cost would impact their ability to afford life's other essentials, including food, medicine, and shelter.

So, all of these factors must be weighed as states and jurisdictions consider energy solutions that are reliable, even during the hottest and coldest months, that are resilient against extreme weather, and cyber and physical security threats that consider issues of immediate environment and environmental justice, that address economic concerns and opportunities that achieve decarbonization goals. And of course, that ensure that rates are just and
reasonable.

Finally, I want to note that all the items I just mentioned fall squarely within the state's jurisdictional bailiwick under the cooperative federalism framework created by the Federal Power Act and the Natural Gas Act.

If you could advance the next slide, please.

As I mentioned, the District has robust decarbonization goals, including reducing carbon emissions by 50 percent by 2032 and carbon neutrality by 2050. These align with our goals and commitments under the Paris Climate Agreement.

However, it's worth noting the District is not alone, and other jurisdictions have enacted similar goals. According to the National Conference of State Legislatures, more than half of the states have established renewable energy targets; 30 states, as well as Washington, and 3 territories have adopted renewable portfolio standards or RPSs. Fourteen states, Washington, Puerto Rico, and the Virgin Islands have an RPS requirement that exceeds 50 percent or more.
As I said before, offices like mine are in
are charged really with the responsibility of making
sure that as low -- as state and jurisdiction -- and
other jurisdictions set the clean energy goals, we can
do so in a cost-effective, reliable way.

Advance to the next slide. Great. So, I
mentioned that many states have clean energy and
decarbonization requirements. They differ both in the
target number. So, for example, whether it's 50
percent, 35 percent, 40 percent, whatever the number
might be, as well as the pace. Some governments it's
2030, 2050, 2070. And it's also worth pointing out
that some states, as is their right, do not have any
clean energy or decarbonization requirements or goals.
Additionally, states may define clean or renewable
ing energy resources differently.

Almost all states that have RPS requirements
include additional resources like solar, wind, and
hydro. But several states include nuclear power, under
a zero-emissions resource credit -- and credit it
accordingly. Others include thermal generation that
uses renewable resources like ethanol, waste, or pulp.
And as carbon capture and sequestration technology develops, thermal resources that have this capability may also be included under the umbrella of clean or low emissions resources.

This diversity, of course, can be a strength, particularly as we consider the range of resources necessary to reliably and sustainably meet the targets of the energy transition. But it also complicates policymaking at the regional and national level.

For example, PJM Interconnection, which manages the wholesale grid for 13 states and the District of Columbia, has a carbon pricing taskforce that has been going for the past two years. While discussions around stakeholders, including DCOPC, have been informative and robust, issues like border adjustments between the different states that make up PJM and their different decarbonization goals makes progress difficult.

And, you know, we talked a little bit earlier today about the difficulty with border adjustments internationally. But those same issues arise and are just as politically thorny domestically when we have
different goals and different carbon and energy goals among states.

That's not to say there haven't been successful multistate programs -- and Secretary Grumbles talked to us earlier today about RGGI. But they are limited and often encompass states who have very similar generation portfolios and climate targets.

If we could jump to the next slide, please. The slide that we're looking at here is a -- is courtesy of PJM's 2020 Maryland and District of Columbia State Infrastructure Report. And I think the big takeaway from this slide is that, you know, the PJM region has seen significant reductions in carbon over the last 15 years, largely due to the transition from coal to natural gas-based generation.

And I think one great thing we can say about this is that the existing market constructs, the energy market, the capacity market, which is the forward energy market in PJM, do work. And they are helpful in reducing carbon.

And I want to sort of provide some late-breaking news. So yesterday PJM announced the results
of its latest capacity auction. And again, it showed a continued decline in high-carbon resources like coal, while with an increased use of zero or low-carbon resources like solar, wind, and nuclear.

I think the question here is has as all the low-hanging fruit from the coal to gas transition already been harvested? You know, we started out at about 1,300 pounds per megawatt hour, and now we're down to just below 800 pounds per megawatt hour. But there may still be some room for lower carbon emissions simply due to the market retirements of the existing inefficient high-carbon resources.

Second, so assuming that we can't get to deep decarbonization with existing market constructs alone, we need to consider whether decarbonization -- whether the carbon pricing, I'm sorry, can help us do that. And that's really the discussion that's important here today, and whether decarbonization can help us get to that next level -- whether carbon pricing can help us get to that next level of deep decarbonization that the science tells us is necessary to avoid most of severe impacts of climate change.
If you jump to the next slide, please. And actually, one more, and this is kind of some of the points that we talked about with the last graph on the PJM market. So, as we look at carbon pricing from a consumer perspective, there are several positive attributes that stand out. As we look to transition the grid into a reliable and resilient manner, we have to evaluate resources based on common factors. Common factors help us recognize that each resource brings strengths and weaknesses, and that no resource runs 24/7/365.

So, every resource has outages, every resource has weaknesses, whether it's fuel supply, whether it's the intermittency of other resources such as with solar and wind, whether it's the impact of extreme heat or extreme cold on the ability of a thermal resource to light.

And so, we need to create a framework that considers those, and carbon pricing can help us do that. Carbon pricing can also help create a uniform value for all resources, both carbon free and thermal. And this, again, allows us to value these resources on
the attributes they can offer, including the attribute of lower or zero-carbon emissions.

So again, it's a way to sort of levelize the playing field, allow resources based on the attributes they have, and allow the market to recognize those attributes. And attributes that are important to consumers, like reduced carbon or zero carbon that contribute to sustainability, those attributes should be included in cost to consumers, and consumers should pay for them. But, again, we need to make sure that there's a levelized playing field for that.

Pricing across the region may address some of the border adjustment issues that we've talked about. Obviously, the bigger markets or more flexible markets may address some of those border adjustment issues that are often very thorny and prevent the development of large-scale carbon markets.

Carbon markets may reduce the need for individual state policies. You know, I described the patchwork of state policies, and different states have different policies. I can't say that if we develop a national carbon market or even a regional carbon
markets that the states would give up their
authorities. But I think there will be less incentive
to develop some of those policies.

And I think that would have a benefit.

Because as we lower barriers to entry, we increase
competition with lower prices, that -- those are all
good things for consumers. So again, I think in that
respect, carbon pricing may help create a more open and
competitive market. And that's obviously something
that the end consumers favor.

It may also address perceived concerns
regarding state policies in organized markets. These
concerns particularly address ways that state policies
may incent certain resources, including low-carbon
resources, and become a particularly tough issue or
flashpoint in the capacity markets at PJM and ISO New
England. While DCOPC believes that, at most, the
impact of these state policies has been minimal, carbon
pricing across all resources is one tool to address
this political concern.

Let's jump to the next slide, please. And
so, a lot of strong attributes of carbon pricing -- but
I would want to say that consumers and key markets are not quite ready to dive right in. Most importantly, of course, the details matter. We want to demonstrate a cost benefit to consumers. Higher costs, which carbon pricing will likely involve, must come with clear benefits to sustainability.

And, you know, again, when we look at all these different market mechanisms as consumer advocates, it's really important to understand what we're incenting, and making sure that if consumers are asked to pay additional money that they're getting the good bang for their buck, and that we're getting the right incentives that we want.

There are questions, of course, about equitable and just distribution of revenue from carbon pricing. It's critical that some of the revenue from carbon pricing be used to help ease the burden of the energy transition for those moderate- and low-income ratepayers who are really at the most vulnerable end of the scale that we need to be concerned about.

Questions about the appropriate scope of the private market. So obviously, we talked a little bit
about RGGI. And RGGI is an interesting focus because, of course, it covers three organized markets: PJM, New York ISO, and New England's ISO. We also talked about the California Air Resources Board, and that's more focused on a single market.

But the question is, does carbon pricing work across a smaller sort of organized market? Does it work across an organized market, an RTO, to go in a multimarket situation? So again, something like New York ISO, ISO New England, and PJM. Or do we want to go for a nationwide carbon market?

And there are strengths and weaknesses to each approach. And bigger markets, of course, bring economies of scale. And the benefits of broad market participation and competition, which lowers prices, and probably gets us our most diverse and robust grid. However, diversity of resources is across states and across regions. And the topology of the transmission system may limit some of those efficiencies.

So again, different regions that use different sets of resources, transmission systems are different across the country and in different organized
markets. And so again, that may limit some of the resources -- some of the efficiencies that we would get from a large multi-region or even national market. So, it's something to consider as we move forward with it.

We want to, of course, match the incentives with goals. Markets work best when incentives are clearly tied to goals. We want to incent the right resources, dispatch the right time, in the right place, for the right cost. And, again, getting those incentives in writing is always critical. And when you're asking ratepayers to pay more and to incent certain activity, you want to make sure those incentives work.

Questions about the forward-looking nature of the market. Many energy products are forward looking. So capacity, financial transmission rights. Does it make sense for this market to also be forward looking? What's sort of the appropriate timeframe -- what would stand -- again, the right resources to do so in a cost-effective manner.

So those are all considerations that the consumer advocate perspective and my office
perspective, if a carbon pricing proposal came forward for, say, the PJM region, which was the District is part of, those are some of the questions that we would ask in terms of whether this makes sense for ratepayers in the District of Columbia.

Last but not least, last slide, please. We want to recognize what can the Commission, the CFTC, do to help us? You know, make sure that if we go down the road of carbon pricing and a carbon market, we do so in a cost-effective, efficient, and equitable manner. And recognizing, of course, obviously, the CFTC would not be the body that would set up the market. Because all of these markets have derivatives, it will play an important part in making sure that the market works for market participants, and for ratepayers.

So, sort of recognition of use of carbon pricing as a hedging tool. Commissioner Berkovitz this morning noted the way that the Commission can -- the role the Commission can play in incenting certain products that will help with the energy transition. That's certainly an incredibly important part of this. Ensuring transparency and market liquidity.
Consumers always want to make sure that the market is transparent, that we understand the transactions that are going on. And then of course, that there's liquidity, so that prevents the market from market power abuses, those types of things.

And then finally -- and this is also something that I was really glad to hear Commissioner Berkovitz mention, market integrity and ensuring that consumers are protected from market manipulation and failure. And that's obviously a key regulatory function of the Commission.

So, with that, I'm happy to conclude and look forward to any questions. But again, you know, I think carbon markets can certainly offer potential for consumers, but we need to balance that potential with the details as they develop. So, thank you very much, and I appreciate the time.

CHAIR WIGGINS: Thank you, Erik. Mr. Chairman, Commissioners, the Natural Gas Supply Association is a trade association of natural gas producers, marketers, and suppliers. "Markets matter" has been our tagline for well over a decade. If we
were all there at the CFTC and I handed you my business
card, it would say clearly on there, "markets matter."

But for us, it really is more than a tagline.

It's really fundamental to what we believe, that
markets do matter. We also recognize that there is a
national -- really an international conversation going
on about the need to reach a lower carbon energy
future. And while markets may never be perfect, really
whatever perfect means in that context, we do
fundamentally believe that a market-based approach is
the best approach to reach the goal of a lower carbon
energy future.

We're very proud of the fact that two years
ago NGSA publicly announced the support for national
economy-wide price on carbon. And that made us the
first national gas trade association to take that
position.

As we said then, and as we continue to
believe, an effective, well-designed carbon price
policy, whether it takes the form of a tax, or a cap-
and-trade, or other forms of pricing, it's really
critical to decarbonizing the world's energy system.
Such an approach, we believe, would provide a level playing field for different fuels and technologies. We are not against any other fuel. We just want an opportunity to compete. We know that it's going to take a lot of hard work to build a lower carbon energy future, and we know that nothing is easy when it comes to tackling the issues around climate policy. So why should this be any different?

The details -- and some of them have been talked about here today -- about border adjustment, leakage, the price of carbon, how to allocate the revenues, those are just a few of the really many complicated issues that agencies, states, regions, governments are going to have to sort out. But in our view, it's well worth the effort. And it's well worth the effort to develop a sustainable, long-term solution and also instill market confidence in the future.

But regardless of how it's done, our members seeing natural gas as an important building block in reaching important climate goals, a building block that is in partnership with renewables. It's also abundant here in the United States. And it's affordable, which
is also something that's been discussed quite a bit today. We've seen some success in the discussions of carbon policy, particularly at FERC in an effort that began under Chairman Chatterjee's leadership. FERC recently issued a policy statement that makes it clear that FERC will consider a carbon pricing proposal that are brought to it from the organized markets from the state, while confirming also that FERC does not intend to step on states' rights.

Recognizing that there are lots of obstacles, we still think that a carbon price policy is the best and most sustainable long-term solution for several following reasons. First, we believe that if it's properly implemented, it will allow us to effectively achieve carbon reductions without compromising competitive wholesale markets. For instance, some resources in the regional transmission organizations, the RTOs, are subsidized by their state, which allows them to bid lower prices in the market and outbid those that are not subsidized.

Second, carbon prices allow all resources to
compete, and allow for natural gas renewable partnership to address intermittency and resource adequacy. Keeping the lights on is one goal that we all share. And in some of the conversations that have gone on in some of the states, in the cities, in the localities, I'm not sure that keeping the lights on is really something that has been fully considered the way that we think it should. We've got to keep the lights on. We've got to continue to power this country. And that's a promise that I think we've all made and that we need to keep to maintain the public's trust and confidence.

Third, carbon pricing incents innovation. Now, one of the reasons that we have such an abundant supply of natural gas in this country right now is because of the Shale Revolution. The Shale Revolution came out of technological innovation. So those same smart people and more smart people who have devoted so much time, effort, and energy in the innovation that led to this Shale Revolution I'm sure will continue to work on things that can lead to new or cleaner technologies. Carbon capture, utilization, and storage
is one. But all of these new technologies will
hopefully reduce the cost of carbon for businesses.

And finally, allowing the market to select
the most economical resources has never been more
important. We're hopefully coming out of a pandemic.
Hopefully, it won't be that much longer before we'll be
able to gather at the CFTC and other places to discuss
all of these important issues. But there's a recovery
in this country going on. People are trying to get
back to work. People are trying to get back to their
job. States, households, businesses are invested and
are investing in this economic recovery. And the
revenue generated by carbon pricing can be used to help
those who have been impacted.

We're not in favor of government policies
that pick and choose the resource mix through direct
funding. That's why we believe that markets matter and
that markets work. And as a key federal regulator of
markets, the CFTC is as well aware as we are that
markets do matter.

Given the broad support for carbon pricing,
and what we think is a general recognition that is one
solution that really can effectively balance between climate carbon targets and selecting the lowest cost resources, encouraging investment, and ensuring energy reliability, sometimes we're a little puzzled as to why it doesn't get more traction.

But we're really thankful that, today, this conversation is happening at the CFTC. We think that the CFTC is an important convening authority to continue to bring market participants and stakeholders. And really, everyone who has a stake in this and the outcomes of this conversation. But to bring people together and then continue to get ideas and thoughts and proposals about how we can move this forward.

Thank you very much for your time. And with that, I will turn this over to our next panelist, Annette. Thank you.

MS. NAZARETH: Okay, thank you. And thank you -- can you hear me? Thank you very much for inviting me to speak today on the Taskforce on Scaling Voluntary Carbon Markets. I very much appreciate the invitation of the Commission and the market advisory committee to have the opportunity to be here today.
The Taskforce, I know, has been mentioned several times in the proceedings today, which is very gratifying. It's also, I think, a dramatic fact that we were a very open group. And many -- I think many of the folks who are listening and participating today have probably either participated or had input into our process.

So, the Taskforce on Scaling Voluntary Carbon Markets is a private sector-led initiative. It's working to scale an effective and efficient voluntary carbon market to help meet the goals of the Paris Agreement. The Taskforce was initiated by Mark Carney, who many of you know is the U.N. Special Envoy for Climate Actions and Finance. And he also, if you recall, was the former Governor of the Bank of England, then former Governor of the Bank of Canada.

The group is chaired by Bill Winters, who is Group Chief Executive of Standard Chartered. And it's sponsored by the IIF, which under the leadership of Tim Adams. And I am here today because I served as operating lead for the Taskforce, I suspect, because of my background at the Securities and Exchange Commission
with respect to markets as the Head of the Division of Trading and Markets, and then as a Commissioner. And our group also has a tremendous amount of knowledge and advisory support from McKinsey.

So, the Taskforce, as I said, is a very broad group, over 250 member institutions and over 400 individuals. And I can attest to the fact that they have been very active participants, and they represent really the whole value chain for the carbon markets. They represent buyers and sellers with carbon credit, standard setters of the financial sector, market infrastructure providers, civil society, international organizations, and even a number of academics.

We also, in the second phase of our efforts, formed an advisory group of 20 environmental NGOs and investor alliances and academics to run by them, you know, what the results of our working groups were in order to get their views and make sure that we were aligned with current thinking.

The Taskforce's unique value proposition, as I said, is that we brought together so many members of the value chain to work together and to provide
recommendations on such a critical issue facing our
countries and the world. And that was really one of
the main focuses of ours, is that this is a global
issue, and we have to address it imminently.

As others have said today in order to achieve
the Paris ambition of limiting the average temperature
rise to 1.5 degrees Celsius, everyone in the global
community has to reach net-zero emissions by no later
than 2050. And to credibly reach that target, have to
start well before 2050, and we believe well before
2040.

So, you know, we have been advocating that
every participant in the economy, every country, every
bank, every investor, has got to start adjusting their
models now and developing credible plans for their
transition, and to implement them as rapidly as
possible.

Many countries and companies today are rising
to that challenge, but more needs to be done. We think
that in that order to -- in addition to addressing the
primary obligation that corporates have, for instance,
to decarbonize, additional compensation and
neutralization efforts are also very important. So more has to be done.

And the reason it is important to have these carbon markets is that it is impossible for some market participants to reduce their carbon emissions as quickly as necessary, given either the state of technology or the excessive costs of doing so at this point. Which is why having carbon offsets and having carbon credits is an important supplement to that effort.

Others talked, I thought very eloquently, about the difficulties in the markets today. Derek, among others, talks about the efforts of CME, I thought it described it well. I mean, what we have today are markets that I don't think that kind of robustness, the integrity, the transparency, frankly, the standardization that we think is necessary to build these markets up quickly enough to make a real difference in our carbon goals.

We need, as I said, more standardization. I think what we have today -- we have carbon markets. We've heard about them in today's call. And I think
there's been a lot of progress made. And those who've
been involved in that should be credited with that.

But the fact of the matter is, we still face
a lot of uncertainty in these markets. There's still
crains about the integrity of the underlying carbon
credits. There are concerns, some raised concerns,
about the registry. I think with the lack of
standardization, pricing is difficult. And in
addition, I mean if you just think about market
structure in general, I mean if you build robust,
standardized markets, you would expect more liquidity
to aggregate around these products. And therefore,
liquidity would beget liquidity.

And going back to one of the questions I
think that Commissioner Berkovitz raised, I think you'd
also see more intermediaries coming into the market.
In other words, this is something that we want to
really scale up, like a very well-functioning,
legitimate, well-recognized market as quickly as
possible.

So, to give you a little background, the
Taskforce was initially convened in September of 2020.
And at that time, we came up with a report of 20 recommendations, identifying solutions that were necessary to scale the voluntary carbon markets. And those things that were discussed really went to market integrity, product integrity.

Again, as I mentioned, coming up with a standardized product is something that I'll talk about later, which was a core carbon principles, what is the core underlying and also additional attributes -- which are additional attributes to the carbon contract that are important to some people, whether it's the type of -- whether it is a natural-based solution, or a technology project, or things of that nature, so that people could have a limited number of additional attributes as well.

The membership -- the report was issued on January 27 at the virtual World Economic Forum, among other places. But since then, the membership has grown. And as I said, we now have a huge number of members, over 250 organizations, 20 sectors of the economy represented, and membership over 6 continents. And as I said, to ensure the highest level of
integrity, we also added an advisory board.

But the work isn't done. We recommenced the project. Phase 2 began in March of this year. And we've done a lot of work that I'd like to briefly describe to you, and also commend to you our report, because we have issued a draft report of this Phase 2. It was issued on May 21st. They're looking for June 21st for folks to get back to us with comments.

But the work for the Phase 2 focused on three primary core working groups or working topics. One was governance. The second was legal principles and contracts. And the third is credit level integrity. And I'll describe those in a bit more detail.

Now, other areas that were also part of the recommendations from Phase 1 are -- they're not forgotten. But we are dividing and conquering. There are other groups and other independent efforts that are underway to address the issues that we did not undertake.

[Audio interruption 4:33:28 until 4:33:54]

-- and have been done primarily by the private sector. And I think many who are participating
today have been part of those efforts. And I know that there are lots of efforts underway for how we're going to clear these trades, what type of future products might be created, focus on meta-registries and the like. So, lots and lots of work underway there and with some of the other issues.

But as I said, we focused on three primary issues: governance, legal principles and contracts, and credit level integrity. We also had a fourth working group that was done primarily by the operating team, and that was stakeholder engagement. That's one of the very important issues here, is that there'll be the common public understanding and narrative around the value and objectives of what we're doing and the value of an offset market. So, we spent lots of time on that as well.

But for our three working groups, I'll focus them on them in rapid order. Our first goal in governance was to create a future umbrella body, with a mandate to implement, host, and curate a set of core carbon principles, provide oversight, standard setters, and to coordinate interlinkages between individual
groupings. And so, the Taskforce did create a blueprint for a future governance body, specifying this mandate, organizational structure, potential sources of funding, and a process for its setup.

We did find that a large majority of our participants emphasized -- and I heard the sentiment on today's proceedings as well, that we need to really increase the quality of credit. We need to have -- to ensure integrity and liquidity in these markets. And so, the feeling was that to have trading at scale and to ensure that that happens, we needed to propose an oversight group.

Obviously, challenging to do that from scratch. We've got several recommendations on how to do it, that, again, we're looking for views on. But as I said, the base issues with this group are that are really have to establish, post, and curate the core carbon principles, and what is the eligibility for those.

This committee that we formed, this working group, did not come up with what those standards were, but rather is leaving it to the governance body to come
up -- to establish what those core principles are, and
then establish an assessment framework and assess --
and then establish eligibility principles for suppliers
and verifiers.

They also provide oversight for the standard
setting organizations on adherence to the core carbon
principles. I keep wanting to call them CCPs. But I
know everyone on this call, like me, thinks of CCP as
something other than core carbon principles. And then
they will also work on coordinating with other groups
that are involved in voluntary carbon markets to ensure
that there's consistency across those efforts.

The second working group, again, was legal
principles and contracts. And our goal there was to
standardize the legal framework underpinning credit
issuance and trading contracts with a common language,
common understanding, -- things like liability,
ownership, delivery, et cetera.

Again, one of the issues that we have today
with the carbon markets is a lack of taxonomy, a lack
of consistency of provisions. We have buyers and
sellers who find each other and do trades, but the lack
of standardization is certainly a friction in preventing rapid scaling of these markets.

So, we defined use cases to drive awareness of the potential ways to use the market. We developed operational requirements or terms of use and standards. And then we worked on developing general trading term clauses. So again, it's something that governance group can ultimately act upon. But we thought that it would be helpful to give them a head start by coming up with what would key terms be, such as rules on dispute resolution, limitations on liability, indemnity clause, things of that nature. So that, again, we would be furthering the goal of having standardization and consistency in the market.

Finally, the third working group is credit level integrity. And our goal there was to create the core carbon principles that I've described. And I should be clear that while we describe what would be a core carbon principle -- and therefore, what would be eligible for the carbon trades that we're recommending -- the bottom line is that there's nothing that precludes trades from being done that don't meet those
standards -- they just -- obviously did not come within our framework. We're not regulators who can prevent trading in other ways.

So, we achieved our -- we think, our goals, by drafting an assessment framework for the standards, and an analysis of credit eligibility criteria, and a proposed taxonomy for additional attributes. This one is going to be the biggest amount of work for the governance group because obviously, there's a lot that goes into developing what are -- what is a core carbon principle.

We've done -- you'll see in the report a lot of work on -- all of the literature that so far expands on what makes a good, credible carbon contract. And that will be a starting point for the governance body's work. But again, the core carbon principles at base is designed to create a high-quality standard for carbon.

And as I mentioned earlier, we also have proposed a limited number of additional attributes that we think are likely to be of interest to buyers and sellers, but that -- we think by limiting the number again, it will hopefully encourage greater
So, the additional attributes today, these are attributes that exist today, I think some of our panelists even discussed them, but they're not often specified. And they're not -- if you look to the registries today, they're not classified in the registries as having these attributes.

So, for example, was the contract for removal versus avoidance or reduction credit? Going forward, these attributes would be specified for each contract. Other types of things, as I mentioned earlier, such as what was the removal or reduction method, such as was its technology or nature-based, or what was the storage method? Those are the kinds of things that we are proposing as additional attributes. And we think, again, having the core contracts and the additional attributes will -- the limited number of additional attributes would enhance the ability to create reference contracts based on those actions.

So needless to say, we think this has been a really historic effort. It's been very gratifying. It has been tremendous to have the cooperation of so many
people who -- you're always saying, "Leave your special
interest at the door, and just given it your best
effort." And I really think, largely, that was the
case for very similarly minded -- very like-minded in
trying to do the right thing for the planet.

And so again, just to remind you, the report
was -- the draft report was made public. We are
looking for comments that anyone might have by June
21st. I think you could find the report on the IIF
website, among other places. We plan to issue our
final report mid-July. And from there, our hope is
that it does not become a very heavy doorstop, but
rather something that really makes a difference.

We're very optimistic that we'll be able to
stand up a governance group quickly as possible. Late
summer or early fall would be our goal. We also are
hoping that we would see some pilot trades done before
the end of the year. And we're also very heartened to
see all the activity, as I said, that is already
happening, particularly in the capital markets in this
area. I mean, we've seen some carbon exchanges already
being formed and being ready to -- announcing their
formation with -- IHS Markit announced that they've
created a meta-registry that could bring data together
from all the registries across the globe.

So, the wonderful thing about this -- these
kinds of efforts that you do get to see how the capital
markets can work at their best to come up with the
right structure.

And finally, I think, you know, as others
have said, it's quite clear that what we'll see from
all this is future contracts in this area. That's why
we're here today. And I know that the CFTC's been very
encouraging of efforts in this space. And I'm looking
forward to working with you over time to -- in the way
that you can to assist us in having a robust and
credible markets for carbon offsets.

CHAIR WIGGINS: Thank you, Annette. Matt,
we'll turn this over to you now.

MR. PICARDI: Thanks, Dena. Good afternoon,
Mr. Chairman, Commissioners, EEMAC participants.
First, I want to start out by thanking Commissioner
Berkovitz, and Abigail Knauff, Lucy Hynes for
developing this timely program, and giving the
Commercial Energy Working Group an opportunity today to
present on what -- our activity a little bit in these
markets. But more importantly, offer a proposal that
we think going forward will help the Commission
understand both the underlying markets and maybe the
way the secondary and derivative markets can develop
around what we call environmental products, which are --
-- have a little bit broader scope maybe than just
carbon emission credits, because they're part of the
energy market complex.

But let me begin by congratulating all the
previous participants today and panelists, and their
extraordinary presentations. They were very
informative and really framed a lot of what's going on
today. Then I want to provide some background on our
proposal on -- or on what our proposal involves.

So, the members of the Working Group
participate in many different energy markets, and
markets that have government programs that are directed
at reducing carbon emissions. For example, we've heard
a lot of discussion today about transportation sector
efforts, utility sector efforts, voluntary markets,
programs that work -- are generated at a -- by
government agencies.

Overall, we support an economy-wide market-
based oriented approach to explicitly add the price of
carbon to energy markets as a means of reducing carbon
emissions. We believe this is the most efficient way
of reducing carbon in the sector.

At the federal level, we -- at least with
respect to the development of underlying markets, there
have been recent legislative proposals to address
carbon emissions that includes some market-oriented
approaches. It's hard to tell though where those
proposals will go, and it's still gaining traction.

So, at present, we kind of view the world in
a way we've heard a lot of today, which is around state
and regional programs in the US. They're conducted at
those levels and in different sectors of the economy,
and they're directed to reduce carbon emissions. But
more importantly, like we heard today, they're also
designed to support the development of renewable
resources that will help the overall reduction of
carbon emissions in our economy.
Members of the Working Group face compliance obligations with a lot of these programs. For example, we could look at RGGI and members who would be operating fossil fuel-based carbon electric generation plants that emit carbon, and have to participate in those markets and do so in order to meet compliance obligations. And they also participate in renewable energy credit markets under renewable portfolio standard programs that we see across the different states. And those programs are more directed at developing specific renewable resources.

And we can discuss whether or not those programs are within scope or without a scope of what I'm talking about today, but they're certainly related. Because they -- as we look at those programs and there's -- and renewable energy credit markets that evolve around them, we know that they are a part of the revenue stream in the support that's needed to develop a lot of these resources we want to do going forward.

So, we really believe that the near future, at least, will include a smorgasbord of policies, as we call it, and environmental products that will be used
to address carbon emission reductions. And since the
physical markets and derivative markets for these
products are closely related, we think it's important
for the CFTC to have a background on these, how they
developed in the parameters of these products.

As I mentioned, it's well established that
the carbon markets and the markets for allowances
simulated derivatives are closely linked. And
financial derivatives play an important role or
function in enhancing liquidity and facilitating price
discovery, help market participants hedge and meet
their compliance obligations, as well as consider the
way they want to develop particular resources.

This linkage means it's important for the
CFTC to provide guidance on principles that it would
consider in each role as regulator of certain secondary
markets and derivative markets for environmental
products. And again, when I talk about environmental
products a little bit broader, not just including some
of the markets we talked about, directly dealing with
carbon emissions, but also maybe renewable energy
credit markets.
By having this understanding and a strong regulatory insight and oversight of these markets, we will lend competence to market participants and policymakers considering developing new environmental products going forward. And it will also help market participants comply and hedge their obligations going forward in support of efficient, market-based solutions.

The Working Group is proposing the establishment of a subcommittee charged with the assignment of preparing a report for setting forth guiding principles for the design of markets, for the independent trading of carbon allowances and offsets, basically focusing on secondary markets and derivative markets.

This effort would complement work that has been done under the Market Risk Advisory Committee, as well as what's going on in the newly created climate risk unit. Also, it's worth noting that some of this effort is probably not plowing new ground. And that is because in 2011, an interagency report was developed under the leadership of then Chairman Gensler looking
at the oversight of proposed carbon markets.

This report that was developed on an interagency basis was required under Dodd-Frank when that was implemented. And it provided analysis of the then current and complex web of regulatory oversight of carbon markets in the markets that existed at the time.

The scope and intent of the proposed -- what we're proposing today in developing a subcommittee to develop a report that would have guiding principles around how these markets should function. It would be different from those efforts that have taken place in the past. It's intended to facilitate fair and orderly trading in carbon markets by promoting uniform and consistency between designing the secondary cash and related derivative markets for carbon allowances and offsets.

It is not intended to replace efforts that other regulators will undertake and that have jurisdiction over the development of the primary markets for these products. And much of the discussion we heard today has focused on the development of some of these markets, what we call the primary or
underlying markets.

So, at a high level, we see kind of two tracks here. One, there would be structural elements that we would discuss with this committee and develop guideposts around that would address things like a clear statement of jurisdiction, identification of policy objectives, the recognized need to facilitate continued market development and liquidity, and benchmark settings.

Some of the key market design features would also be developed in this report, and some of those items were touched on today. For example, we talked about market integrity and customer protection. That would be an element we'd like to see seen, cross border considerations in transaction monitoring, to name a few of a long list of developments that we think would be part or it should be considered as part of a carbon market design.

How do we intend to deliver this? Well, we're proposing that -- we've developed a proposed statement of purpose, which we hope that would be considered by the committee in addressing some of the
items I just went over in more detail, and that that
statement of purpose would be considered by the
committee pursuant to whatever procedures that the
Commissioners and Abigail seem -- would say are
appropriate for considering this type of thing.

So again, we're trying to push forward here a
-- an approach that would help the development of these
markets. And we look forward to working with others to
do that. And thank you for your attention. And I'm
free to answer any questions about the proposal, if
anybody has any.

CHAIR WIGGINS: Thank you very much, Matt.

Abigail, do we have any questions and comments from
Associate Members at this time?

MS. KNAUFF: I have not seen any in the chat.

But if any Associate Members have a question, please
speak up.

CHAIR WIGGINS: If not, I will move to the
EEMAC Members. Do any Members of the EEMAC have a
question or comment?

MR. COTA: This is Sean Cota. Sorry for not
unmuting quickly enough. I guess my -- I just have a
general comment on everything. The potential for
leakages in these markets, as we're talking about
commodities that are global, right? Air is everywhere.
So, these things are going to go everywhere.
And the diligence that's going to be required in all of
these programs is going to be severe. So as these
markets increase in size, the challenge for the CFTC
and other regulators are going to be challenging. And
God bless you guys for working as hard as you are on
all of this. It will be a huge challenge. Thank you
for putting this together.

CHAIR WIGGINS: Thank you, Sean. Are there
any other questions or comments? I'll try the
Associate Members again, before we move back to the
Members. I don't think so.

Any questions or comments from the EEMAC
Members?

MS. KNAUFF: Yes, Bill McCoy.

CHAIR WIGGINS: Bill, go ahead, please.

MR. McCOY: Yeah, thank you. And I'd like to
thank all the Commissioners and all the panelists today
for their excellent presentations.
And, Matt, I think your proposal is very intriguing. And you did mention cross border considerations, like I was wondering whether you would envision that the scope of this proposal or this report would have potentially recommendations regarding the -- how the CFTC, which has had such a vast, great history in terms of coordinating internationally with other regulatory bodies.

How, given that this is truly a global product, how it can be engaged in a further coordination as these markets are developing and have -- coming up with standards and policies, the approach, so that there's perhaps a greater chance of liquidity across the markets globally? Thanks.

MR. PICARDI: I think that -- as I take Bill's question, as how that could maybe -- effort could occur under the proposal I outlined and certainly it -- the CFTC probably has more experience than any agency I can think of -- or certainly tremendous experience in addressing cross-border type issues. And the participants on this committee and the presentations we've heard from the various folks also
had a tremendous experience in that area.

So, I think it would be a great opportunity
to this committee that -- subcommittee, excuse me, that
we're proposing in our reports to be developed to focus
on how to do that because it is a worldwide problem,
and then in terms of how these markets are formulated
and how they could intersect would be a great effort.

DR. SANDOR: Dena, it's Richard Sandor. I
wondered if I could just make a shout-out to Annette
and Mark Carney who gave a presentation at the American
Financial Exchange at the University of Chicago on the
Taskforce for Scaling Voluntary [Markets]. Annette,
you would have been really pleased. He was fantastic.
Great academics joining from France, from England, from
the University of Chicago. And he spurred a tremendous
interest in regional and midsize and community banks.

So, let's keep in mind that there's 11
trillion in assets held by people outside the money
center banks, and there is the grassroots interest.
And for the CFTC, particularly for Don and other
people, but these folks like Zions Bank, bank farmers.
And there's really a big interest in agricultural
offset or as they are known at the University of Chicago, negative emissions. I prefer that than offsets.

Just a shout-out to Dan Berkovitz who intellectually gets the whole history. And thank you so much for organizing this. What a fantastic day, and to all of the other Commissioners for supporting. But just a great event, a real privilege to listen to all of these experts.

MS. KNAUFF: We don't have any other comments from the Members. Dena, I can't hear you. Do we have any other questions from the Commissioners?

CHAIR WIGGINS: Are there any Commissioners -

COMMISSIONER BERKOVITZ: Yes, I was -- I'd like to hear Annette's comment. Annette, you commented on barriers to liquidity and issues. And in light of the discussion about -- we should work together on many of these same issues in the context of Dodd-Frank and, as Bill McCoy mentioned, reducing barriers to globalization and harmonization.

And harmonization was a key objective of the
Congress in the Dodd-Frank Act international harmonization when the G20 met. And there was some basic common standards that the G20 all agreed on that market should have, and we have comparability. And there's a number of mechanisms that are built into, for example, the Dodd-Frank regime to promote global liquidity and harmonization. And the climate, it's a very different political structure that we're dealing with that there's not -- there's not quite the same global commitment to all proceed along the same lines and harmonization. And so, we do have these regional markets and what -- in the Dodd-Frank context would be considered fragmentation.

And I take it that part of what your effort is -- is to maybe develop some common standards to maybe help reduce that. But to what extent do you see the regionalization and the separate markets as a -- is this a barrier that can be surmounted, or is this just something -- a type of fragmentation? Is it going to result in separate liquidity pools of necessity? So maybe you could -- or and any other panelists too. But I think, Annette, you were --
MS. NAZARETH: It's a very good question.

Look, I think the issue is that here, visualization is even more problematic, in a sense, right, because we are looking for -- to basically have carbon contracts based on projects in the Global South that folks in the U.S. could invest in.

I mean, there's going to be a lot of -- I think, a lot of cross-border transactions. And therefore, I think the issues of cross-border are even greater here, I would think. And of course, our challenges that we don’t, in a sense, have the power of the pen, right? We're not regulators, so we just have to create a marketplace that people really see is of value and want to participate in, and want to meet those international -- those standards that we're apparently -- you know, we're setting on this voluntary basis.

But I think it will affect the pricing. I mean, hopefully they -- you know, the more integrity you have in the market, the better the pricing in the market, the more people will want to work hopefully go with them, you know, with us or deal with markets that
are adhering to our standards.

CHAIR WIGGINS: Evan, do you have a comment?

MR. ARD: Yeah, thank you, if I may. You know, obviously, the regionalization of the markets now is based on differentiated approaches to climate issues, whether it be carbon emissions directly or development of renewable energy. And so, you have different regions that are approaching this in a different way, different nations that are approaching this in a different way. Although, they're all driving, you know, ultimately towards the same goal, ultimately, of, you know, decarbonization economy.

The market has -- I'll say, you know, the market has dealt really well with this regionalization and these differentiated market -- and these different liquidity pools by creating structures that can trade off basis, and other mechanisms like that. And the exchanges have been really active in terms of listing things across platforms that -- you know, in your multiple markets, and allowing the players to almost consolidate the liquidity themselves by the venue in which they trade. So, I just wanted to add that point.
Thank you.

COMMISSIONER BERKOVITZ: Great all. Thank you.

CHAIR WIGGINS: Anything else from our Commissioners?

If not, we'll move to the next panel, which is our fourth and final panel of the day. We are going to hear a CFTC staff presentation on the derivatives markets' response to the extreme weather event in Texas this past February. We will hear from Rahul Varma, Associate Director in the Market Intelligence Branch of the Division of Market Oversight; and Bill Heitner, an Associate Director in the Risk Surveillance Branch of the Division of Clearing and Risk. Rahul?

MR. VARMA: Yes.

COMMISSIONER BERKOVITZ: Excuse me, Rahul. Excuse me, Dena. Before we proceed to the final panel, I just wanted to clarify -- procedurally maybe, Abigail, could you tell us procedurally where we are? Matt Picardi had a proposal for further action, and what -- procedurally, where do we stand on that? And what would be the next step in Matt's proposal?

MS. KNAUFF: Sure. So, we are going to get
with -- we'll get a transcript at the end of this meeting. And then we will circulate the transcript to all of the EEMAC membership. We'll then schedule our next meeting, where we will hold a vote, and take a vote from the Members, because the EEMAC Members, the nine EEMAC Members, have voting privileges, per the EEMAC charter.

If the vote is to approve the recommendation to the Commission that the Commission form a subcommittee for the EEMAC, we will then file with paperwork with the Commission, as well as solicit requests for membership on that subcommittee, from the EEMAC Members, EEMAC membership, EEMAC Associate Members. And if there's any space available, we will source it from the public-at-large for potential subcommittee members.

And then once the [sub]committee is formed, then the [sub]committee could begin its work in creating a report.

COMMISSIONER BERKOVITZ: And from the time of the transcript to the formal consideration, and about -- the members could discuss amongst themselves, either
informally or in another meeting, in terms of fashioning the proposal so that everybody can -- you know, so that it's what -- the committee can kind of achieve consensus on it.

So, there'll be that opportunity, correct, for members to speak amongst themselves and review it.

MS. KNAUFF: They're not to have the membership discuss across the membership but those members can take the information from the transcript back to their respective firms for review.

COMMISSIONER BERKOVITZ: Right, okay. Okay. And then the Commission -- the Commission eventually, would that -- it's mentioned, it's in the Federal Register, and the Commission eventually would have to approve it. Correct?

MS. KNAUFF: Correct.


MR. VARMA: Thank you. Thank you, Dena. Thank you Abigail and Commissioner Berkovitz for this opportunity. As we said in the introduction, as Dena
said, my name is Rahul Varma, I'm an Associate Director with the Division of Market Oversight.

And today, we -- myself and Bill Heitner, Associate Director in the Division of Clearing and Risk will provide an overview of what happened in February in the Southwest, and the big storm, Storm Uri, and how it affected the energy markets, natural gas and electricity in particular, and what effect it had on the futures market.

I will provide an overview of the events and the physical side of things. And Bill will wrap it up to discuss the specifics on how it affected the CFTC markets and what actions we took.

Next slide, please. Just to be clear, the views that we express here are views of CFTC staff and do not necessarily represent the views of the CFTC, the Chairman, or the Commissioners, or the Division of Market Oversight, or the Division of Clearing and Risk.

And consistent with Section 8, our presentation is a high-level presentation on overall market developments and market issues. We will not be discussing anything specific about an individual trader
or a trading behavior by any specific group of traders even.

Next slide, please. So, while the focus of today's discussion is on the storm and the effects on the energy market, today we want to start off by acknowledging that this was a huge storm, and that effect had a significant impact on life and property.

More than 100 people are reported to have lost their lives during the storm. And the total damages, the insured damages are estimated at around $30 billion. But I've seen some estimates that total losses are as high as $295 billion. This is a significant impact.

So, what happened? So basically, for about a week, between 13th -- or the 12th or 13th of February to the 19th, the U.S., especially the Southwest -- and by that I mean Texas, Oklahoma, Louisiana, New Mexico, and Arkansas -- experienced severe weather, extreme cold. And that's what we see in the map where we are comparing the temperatures over this one week for the five-year average.

And we can see that in a large part of Texas,
temperatures, for example, with 30 degrees below the five-year average. It's quite significant. The other thing that set this storm apart was the geographical extent. It was -- it covered a large area. And at one point of time or the other, there were 170 million Americans who were under some sort of a weather alert. And at its peak, 73 percent of the lower 48 were blanketed in snow. And all of these factors play into the effect that it has on the market.

Next slide, please. Okay. So, I'm going to start off by discussing what happened in the natural gas market to begin with. And if you go to the next slide, so we have extreme cold weather. What this means is there's a sharp increase in demand. And as we see on the charts -- and this demand increased both for heating as well as for electricity generation.

As we see in these charts, we're looking at the Southwest. There's a -- comparing 2021 in the red bars with the -- with the demand level for 2020 in the blue bars, and you see over this period a very sharp increase. And we can see -- and overall for this week, demand was up by more than 50 percent in the Southwest
region. And this, in fact, pushed up the demand for the lower 48, totaling by about 24 percent overall. This is pretty significant for a one-week period.

I don't have it on this chart, but one of the things that we observed is that as soon as the storm passed, the demand level just fell down back to the, quote-unquote, "normal level."

The other thing to note is -- that affected the markets was that at the same time that demand was going up, there was significant well freeze-offs in the Permian region and natural gas production fell. That is shown on the chart on the right-hand side when, again, we compare 2021 with 2020.

A few observations here. At its peak, the system lost about 22 BCF a day. That's roughly 24, 25 percent of the national production. The second thing is that it wasn't an immediate effect on supply. So, the rolling effect as more and more wells froze off. And finally, we observed in the production side as well that once the storm passed, production levels recovered quite quickly back to the normal level.

So now we have a situation where we have high
demand and low supply. Now, how do we meet the
difference? Well, the difference was met from storage
withdrawals. And there was more than 300 BCF of
storage withdrawal for that one week. This is the
second highest level ever reported by EIA, and only the
second time ever again that it was more than 300 BCF
for any one week.

Let's more onto the next slide. So now we
have high demand, low supply, storage is being used
almost to the maximum. And what do we see? We see
high prices. Well, logically, this makes sense. And
directionally, we -- you know, it's consistent with
what we're seeing in the real marketplace that prices
would go up. We're not making any comments on actual
levels of the prices.

So, what we have on the map here is the
different parts of the country, different trading
points. We show the average price for that one week
and as well as the peak price -- the highest traded
price in the market.

I'm going to make a few observations here.
Before the -- before the storm, prices were averaging
around $3 an MMBTU. So, any prices that you see over here, think about $3 as a starting point. The second thing, because of the nature of the storm and the size of the storm, you can see that there was a huge impact all over the all over the country.

Second, these are prices for spot gas, for daily gas, for next-day gas. Because this was a short-lived, immediate event, this affected the short-term prices. And as we'll see, not the long-term prices so much.

So, what were the prices? I'll give you a couple of points here. The Houston Ship Channel, again, going from -- starting from around $3, it goes up to $200, nearly $200 on average for the week, and a peak transaction of $400.

If you look at Oklahoma, the average was $463 for spot gas, next-day gas, and more than $1,000 for the peak transaction that were recorded. In fact, these are the highest prices reported for -- record prices for next-day spot gas, and trading platforms had to accommodate and make changes in the system to allow for four digits. So, this was a pretty spectacular
event when you look at the impact on the prices.

But turn your attention a little bit to the
Henry Hub note, which, you know, as you all know, is a
central point against which the future is delivered, et
cetera. And what we see over there is that average
prices reached $10. Again, quite significant, if you
think about it, that started at $3. But not nearly to
the level -- further away in the system. And the peak
transaction was at $24.

So, the fact that Henry Hub goes up, but not
by the same extent as other places further away, what
this tells us is that despite the supplies on screen,
the pipeline capacity was running all out. So, the
pipelines were running full, and so we would see
further, bigger impacts elsewhere in the system,
further away from the main production centers, if you
will.

Finally, we look at the natural gas futures
also, which is shown on the right-hand side, for the
same time period. In fact, a few days before the
highlighted area is the period of the storm. And what
we see here is that prices, again, going from around
$3, they jump up to about 3.22 at the peak, and then they fall back down. Now this is about 15 percent. The reason the future's prices did not show the same impact was that these were futures for March delivery. The delivery period did not come for another two weeks.

Let's put all of these together. And, again, what this tells us is that the market was looking at this as a short-lived event. Now, another factor to keep in mind is that March is considered the traditional end of the winter season. So, there was a low probability at this point for further supply-demand shocks to the system. So, the futures really did not have as much of an impact, did not see as much of an impact as the cash market did.

Next slide, please. So now I'm going to turn my attention to the electricity market, with a particular focus on Texas. Next slide again, please.

Thank you. So, let's get a few basic facts about the Texas market out of the way. The Texas electricity grid is relatively, physically isolated from the rest of the United States. Not completely isolated, but
relatively speaking it is. The grid is operated by Electricity Reliability Council of Texas, or ERCOT, and it is regulated by Public Utility Commission of Texas, which is a state regulator, if you will.

The second thing that comes into play here, and you'll see some effects of this, it's an energy-only market. There really isn't a capacity market like we've seen other ISOs and RTOs. And approximately half of the generation in Texas is from natural gas.

So, during this period of the storm, we had a significant level of equipment failure due to inadequate weatherization, which means parts of the system, whether it be a wind plant, a nuclear plant, many different types of generation, they stopped working because some part of the system froze up.

In fact, just a quick comment on that. Recently, Governor Abbott signed one of -- a piece of legislation requiring generators and some pipeline operations to -- operators to improve the weatherization of their system.

So as a result of this, so you have a high potential demand, and we have supply falling off
because of weatherization. The second thing that then
happens is that ERCOT, as a system operator,
implemented load shedding to prevent system collapse.
And really, the way that, you know, we can think about
it is this, that the supply margins -- the reserve
margins that are left in the system, the cushion that
you have between the actual demand and what the system
can generate will -- when it begins to fall very low,
the system operator gets concerned that any small spike
in the demand levels can literally make the entire
system collapse.

To prevent that, they engaged in load
shedding. You've seen reports that said that ERCOT
came from within five minutes of complete system
shutdown. Essentially, that could have meant blackout
over much of Texas. As a result of all of this, there
were periods of time when the net-generation, the
actual generation of electricity, was just about 50
percent of the installed capacity or the generation
capacity that was available during the peak of the
storm.

All of this is shown in the -- in the chart
on the right-hand side. But I'll focus on two lines for now, and the dark red line that shows what the projected demand was. That's the demand forecast, short while, you know, just before the storm. This is what the profile -- they were planning -- they were forecasting the demand would be.

And if you look at the thin, blue line, that is the generation capacity that's available, so one could get comfortable that, yes, if the generation works, they would have been able to meet the demand.

However, because of the weatherization issues and system failures across the state, what was actually generated is shown in the dark blue line. And that's a significant gap from the actual demand forecast. And that's what leads to all of the issues related to load shedding, et cetera, and, you know, all of the issues that we saw in Texas.

Next page, please. Next slide. Okay. So again, the same thing that we see in the natural gas and electricity markets also. I'm showing two charts here. One is for ERCOT, not real-time prices. And the other is for the Southwest Power Pool, South -- let's
call it Oklahoma, Southern Oklahoma and parts of the Texas Panhandle real-time prices.

So, you have high demand, supply shortfall, high prices of natural gas. Put all of these together, it's not surprising, it is to be expected that prices will go up. And that's exactly what we see.

There's a subtlety that I ought to mention here. Looking at demand makes sense for parts of the system in, for example, in SPP. Looking at actual demand in ERCOT may not be the most meaningful measure because there was a supply shortfall where actual demands can only be, essentially speaking, the same as what was generated.

So, they -- you have to think about potential demand -- or, in fact, more precisely, you have to think about in terms of reserve capacity, what is available, extra available to be regenerated.

So regardless, what we see is that in both the systems, the prices jump up very high. These charts are on the same scale. And we can see that in ERCOT prices jumped up to about $9,000 a megawatt hour.

For reference, let's think in terms of $5,
$10 immediately before and after the storm. They jump up from levels of a few dollars all the way up to 9,000. This happened several times. They touched in February the 13th, again on the 15th. And then almost steadily from the 16th through the 19th, they stayed at $9,000 in ERCOT.

In Oklahoma - sorry, I should say, more precisely, in SSP south hub, we see prices increase as well. They increased up to again starting from a few dollars all the way up to about 5,000 briefly, and then they came back down, touched 3,000, and they came down again then.

The difference between 9,000 and 5,000. And, of course, there are local differences in the demand and the generation and the price of natural gas, et cetera. But another factor to consider is that for ERCOT, it's an energy-only market, as we discussed. And these high prices are meant to compensate generators for both their -- for recovering the variable costs as well as the fixed costs.

So, one of the things that we should -- I would mention right at this point is that in ERCOT
there were some retail customers, who have retail power contracts that are linked to the wholesale prices; not many, but quite a few of them. And that fact also becomes relevant as we think about -- as we look at what happens afterwards.

So first, in the next slide, let's take a look at how these markets intersect with the futures market. So first of all, there is a very active market in ERCOT futures. It's about daily contracts and monthly contracts.

We're going to pay particular attention to the daily contracts. And so, these daily contracts, they trade up to the physical depth. So, for example, I'm just picking a data out here, for the -- on the 15th of February, I could have traded contracts that settled against the February 15th prices. These prices, these futures contracts are all cash settled to ERCOT prices. So, there is a direct one-to-one correlation with -- whatever price ERCOT puts, that's the price to which the futures settle.

And these -- and as I said, because of the nature of the contract, there's day of contracts, it's
a one-to-one correlation between what happens, a dollar
for dollar. And what we see over here is -- in the
daily contract leading up to the period of the storm.
But not during the storm, but leading up to the period
of storm, we see a sharp increase in both trading
volumes and open interest. This is on the left-hand
panel where the red line shows the open interest, and
the blue bars show the trading volume. And roughly
speaking, both of these about tripled.

And then we dissect this further, what we see
is traders taking position over the period of time
during which the storm was anticipated. So, for
example -- and this is just -- you know, I'm just
giving as an example to simplify our discussion here.
Somebody could be trading on the 10th of February,
which is a few days before the storm, and taking
positions for the 15th of February or the 16th of
February, which was expected to be right in the middle
of the storm.

So, if you think about it, what the futures
markets in the -- in the daily futures markets were
doing as exactly how any other futures markets would
work in terms of, you know, people have certain
expectations, and they expect those expectations in the
market. Normally, however, we think in terms of
futures being a month away, two months, three months,
whatever, away, here we're talking about a few days.
But it's exactly the same construct.
So, in that sense, these futures markets
provided the same service, and they continue to provide
the service for which futures markets are designed.
Just very quickly, I want to mention, if you look at
the bar on the right-hand side, the commercial -- the
futures markets' open interest is dominated by
commercials, 90 percent on the long side, and 80-plus
percent on the short side are traders who identify as
commercial in our systems.
Excuse me. Next slide, please. So now we
come to the crux of the matter in terms of price
adjustments, repricing. We've all heard about that,
the discussions, the debates, the newsprints about
repricing and how that might have affected the futures.
So, by this time, we've established that there is a
direct one-to-one correlation between our daily market,
in particular, and the prices. So, we were paying keen attention to what was going on in this time period.

So, the chart on the right-hand side are the same charts we've seen before for ERCOT, with the prices going up and down, as we discussed, and the highlighted areas of the period of interest to us from a repricing perspective. So, the first blue bar is roughly a period from the beginning of the 15th of February at about 5:30 p.m. And this is of interest because of what happened on the 15th and 16th of February.

So, February the 15th, at around 5:30 p.m., roughly speaking, there was an emergency meeting by the Public Utility Commission of Texas, in which they directed ERCOT to do two things, roughly speaking. One is they said to ERCOT to set the prices to a cap of $9,000 during periods of load shedding. So, this is important for us to understand that during periods of load shedding -- and which means that the system does not have enough reserve capacity to serve all the load that might be out there. And those time periods, set the prices to a system cap of $9,000.
The idea here being "let's attract more generation into the mix if we can." So that was point one that they did.

The second directive they essentially instructed ERCOT to do was to make this change retroactive to the morning of February the 15th. So roughly from 1:00 a.m. in the morning until about 5:30 pm, whatever the prices had been, they were reset to $9,000 a megawatt hour.

Next day, on the 16th of February at 1:00 p.m., in another emergency meeting PUCT rescinded the retroactive portion of these -- of the price change -- of the order from the previous day. As a result of this rescinding, prices from 1:00 a.m. to 5:30 p.m. were restore to the original levels, roughly $6,000 on average. The forward price gap of 9,000 continues.

All right. So now, let's move forward in time. And so, the prices are at $9,000. And remember, at this time period, there are lots of issues going on the ground in terms of making sure that there is availability. And PUCT was also not only looking at the wholesale market, but they're looking at the
regional market also. They're looking at, you know, making sure electricity is available for emergency use, et cetera, et cetera. There's lots of things going on over here.

At some point of time, there started being a lot of discussion around repricing. And the essential push for this came from the notion that we mentioned before about consumers who had contracts, who had retail contracts, linked to wholesale prices. They started facing massive bills for their home electricity consumption.

Reports of tens of thousands of dollars' worth of bills showing up on their doorstep. Because of this, there was tremendous pressure by the Texas Legislature to retroactively change the prices. That was the mechanism that they chose that caught everybody's imagination to begin with. And this resulted in a very strong debate.

Now, on the other side of the debate was -- were people -- were arguments being made about market integrity and finality of markets. And once the market has settled, it should be allowed to settle at that
Then on the 4th of March, ERCOT Independent Market Monitor, Potomac Economics issued a report. And essentially what they said was that for a period of time, from about the beginning of the 18th of February until about February 19th, 9:00 a.m., the $9,000 price cap was done in error. Because at that time the system was not -- did not qualify for emergency action. They were not engaged in load shedding.

This refired the whole debate about whether to reprice or not. And this debate continued for about -- until about early March. It was well after the storm had gone and prices had come down to standard levels, to normal levels. And Potomac Economics' initial impact was -- initial estimate of impact was about $16 billion. I think later they revised it downwards because of inter-affiliates' reactions, et cetera. Now, over time, the Texas officials eventually abandoned their efforts at re pricing.

So that's the story. And now Bill is going to talk about exactly what happened on the CFTC side. But I will start off by saying a couple of points of
interest.

When the first repricing happened, of course it affected futures markets because, you know, they were right in the middle of it. However, the prices got fixed when the contracts were -- had not been settled as yet. The futures contracts that are most affected by those have a five-day settlement window. And so, they haven't gone through final settlement yet. ERCOT hadn't issued the final invoices yet.

Whereas when we look at the second period of the debate, the period of interest was February 19 -- up to the February the 19th. However, the discussion and debate was going on until March. And by this time, ERCOT eventually along the way, they issued the final invoices, futures markets went into settlement. So that went a completely different way in which we had to think about it.

Now, I'm going to turn it over to Bill Heitner to talk about the issues that CFTC faced, the actions they took, et cetera. Bill?

MR. HEITNER: Thank you Rahul. Next slide, please.
My name is Bill Heitner, I'm an Associate Director in the Risk Surveillance Branch for the Division of Clearing and Risk. The Risk Surveillance Branch is responsible for identifying risks in cleared futures and swaps markets, ensuring that those risks are properly managed.

We did discuss the potential impact of ERCOT electricity repricing and how DCR monitored these markets. As Rahul mentioned, the PUCT and Texas officials discussed the possibility of retroactively repricing ERCOT electricity. Repricing has potential to affect futures markets as many of the most active futures contracts cash-settle to posted ERCOT prices.

The notional value of contracts that could have been affected was several billion dollars. To further complicate matters, these futures contracts had gone through final settlement while the debate on repricing was still ongoing. At this point, any change to the settlement would have resulted in post-settlement cash calls and payments.

Exchanges have a process for repricing futures contracts post-settlement. These changes are
relatively small and result in immaterial variation payments. The repricing being discussed in Texas would have affected a large number of futures contracts, and the price change would have been in the hundreds or even thousands of dollars per contract.

DCR estimated the size of these potential payments and determined that several clearing members would have had to make fairly large payments, but not greater than payment they make on a regular basis. The effort to reprice ERCOT electricity were eventually abandoned. So, there was no impact from repricing on clearing members.

Next slide, please. While the debate on repricing was ongoing, staff closely monitored developments at the PUCT and the State of Texas. Staff held regular discussions with DCOs, FCMs, and DCMs to understand their views and concerns. DCR monitored margins, positions, and cash flows on a daily basis to identify risks in the clearing system.

DCR identified clearing members and customers with exposure to repricing futures. They verified the DCOs were collected from clearing members on time and
contacted clearing members to ensure they had adequate capital and liquidity, and were collecting from customers. Throughout this period, futures markets operated as expected, and there were no problems in clearing or settlement.

This concludes our presentation, and we're happy to take questions.

MR. VARMA: And Bill, just in conclusion, one thing that I would say is that overall while there was a lot of stress on the system overall, in general, we can say that the futures market system, including the market, the clearing, et cetera, they all worked as a design. And we've monitored the market, as Bill pointed out, to make sure that that -- all of that was working fine and to serve the purpose of which they're designed. Thank you.

CHAIR WIGGINS: I have not seen any indication that our Associate Members have any comments or questions. Abigail, is that correct?

MS. KNAUFF: I don't see any Associate Members. We do have two Members, beginning with Demetri Karousos.
CHAIR WIGGINS: Yes, Demetri, please go ahead. I know you've got a tight timeframe here.

(Brief Pause.)

CHAIR WIGGINS: We can't hear you.

MR. KAROUSOS: Can you hear me now?

CHAIR WIGGINS: Yes, please go ahead.

(Brief Pause.)

CHAIR WIGGINS: Now we lost you again, Demetri, I'm sorry.

MR. KAROUSOS: How about now? Oh, wonderful, I need to have everything unmuted. Okay.

Less of a question, more of a comment. Just wanted to thank the CFTC during that time when you were in regular contact. And it was helpful and thoughtful for us to be able to share what we were seeing and hear the CFTC's perspectives. So, we welcomed their regular outreach to us.

We want to affirm the statements made just now about how the market performed. We were quite pleased with our risk models' performance. We didn't need to make any parameter adjustments to our market margin models. They worked seamlessly throughout that
And to get a little technical, when you're monitoring the performance of the margin model, you look at what's called your breach activity, the number of times where variation margins, or the profit and loss on a portfolio exceeds the margin requirement. Despite the hectic activity we saw throughout that week in ERCOT, we only had one day of breaches. And our overall margin model, again, without any parameter changes, was well over 99.7. I think it's more like 99.8 percent during that time. So, we were quite pleased with how that the model performed and how our market made it through.

And to be clear, that was quite a volatile period. But, you know, we are designed -- and, you know, we were launched to serve the power market, and are quite pleased, again, with how that performed.

The only other comment I would offer is that, you know, we work together with our clearing member partners in providing this management solutions to the marketplace. Clearing members are critical piece, critical - they guarantee the performance of the market
As you can imagine, some clearing members have taken a pause, just with regards to that market volatility, and are questioning whether they want to continue to support power, in ERCOT in particular. And we would just offer -- you know, the vast majority of the clearing members are fully supportive and continue to be quite pleased, again, with how this market continued, and want to continue to offer this service.

But we just want to continue to emphasize that this whole day has been primarily focused on carbon markets. And from our perspective, when we think of ESG and the broader environmental movement, it all kind of begins with electricity. Electrifying everything is the buzzword with how we will get to our climate objectives.

And you can't really be about “E” in environmental, if you're not about “E” in electricity. We need to see robust, continued support of electricity markets to see the plans built that will help us get to the future we're all trying to achieve here.

So, we just want to continue to assisting
clearing members who are concerned --

MR. SLOCUM: Demetri, excuse me.

MR. KAROUSOS: -- you know, these kind of periodic bursts of volatility. Of course, we saw earlier in 2014, during the polar vortex that affected the East Coast. The market survived, the market did well, and not a single clearing member defaulted. It was well managed. And I just want to remind clearing members that in their commitment to ESG policies, they need to remember that the “E” also stands for electricity.

Thank you for allowing me to speak and for commenting today.

CHAIR WIGGINS: Thank you. Tyson, I think you had a comment you want to offer?

(Brief Pause.)

CHAIR WIGGINS: Tyson, we can't hear you.

(Brief Pause.)

CHAIR WIGGINS: Tyson, we're still not able to hear you. Does someone else have another comment?

MR. SLOCUM: Are you able to hear me now?

CHAIR WIGGINS: Yes, go ahead.
MR. SLOCUM: Sorry for that technical snafu.

Thank you, Dena. I just want to quickly thank Rahul and William for their excellent presentation.

I'm really glad that it appears that the futures market worked as designed. We unfortunately can't say the same for the spot market. Those extremely high prices came at a time of serious market dysfunction.

And we actually sent comments to the Federal Energy Regulatory Commission. They have some statutory authority to step in and change some aspects of the way that bought prices are reported. And we have asked FERC to make some changes as part of an open rulemaking over there at the commission.

But I just want to commend CFTC staff because on your end, it looks like the market worked as designed. So, thank you very much.

MR. VARMA: Thank you

CHAIR WIGGINS: Does anyone have a comment?

Sean, I see you have to turn on your monitors. Would you like to offer a comment?

MR. COTA: I, again, as Tyson said, commend
the CFTC staff for the great analysis in this human
tragedy that occurred in Texas. This is a -- as we
migrate to electrifying everything, this is going to be
a common occurrence. And the grid as you electrify,
particularly for heating related peaking needs, the
grid is going to be blacking out on an increasing
basis.

So, the question that I have is, has anyone
in the staff heard of pricing of resiliency into any
contracts? Because resiliency of the grid,
particularly in peaking -- thank God parts of the
country had natural gas in order to supply the peak.
But there are large -- particularly as we deploy
significant renewables, resiliency in the grid is going
to be an ever-increasing problem.

Is there any talk of pricing -- adding
resiliency in a pricing mechanism to any of these
trades?

MR. VARMA: I think -- if I may just say, I
think that would be more a question for FERC, since our
futures contracts, you know, derive from the physical
market, particularly in this case. As we said, our
futures contracts settle to whatever the price is produced by the RTO.

MR. COTA: I think that makes sense. And I applaud Tyson for asking for these hard questions.

Unless the contract specification is done in a way that keys in resiliency from whoever that is, you're not going to get a price. And if you're not going to get a price, then you have the perverse cash market incentive to create chaos, whether intentional or, "Oh gee, we're supposed to pay attention to that." Those are my just general concerns.

So, I -- Tyson, if you need assistance with that, certainly, I'd be happy to work with you on that.

MR. BLAND: Sean, there is one -- it's not priced into the contract itself. This is Trabue Bland from ICE. You might -- but there is -- well, at least in Texas, there was ancillary services. And that is an all-encompassing term for what I think what you're talking about, which is the cost of keeping the grid up and running.

And in fact, during this time period, it actually went over $9,000. I think it might have
capped out at $24,000. So, there might be contracts like that. They're separate from the underlying contract that might address your concern. It's a good point, though.

MR. COTA: That's perfect. Is that something you could share with the group?

MR. SLOCUM: Sure, yeah. It's a -- I'll dig up the definition and post it here in the chat.

CHAIR WIGGINS: Abigail, I don't see any other Members or Associate Members who are asking to speak. Is there anything else before we move to the Commissioners?

MS. KNAUFF: I don't see any other questions from Members or Associate Members. So, we can head to the closing remarks now.

CHAIR WIGGINS: I think we need to ask if the Commissioners have any questions on that panel before we go to closing remarks.

MS. KNAUFF: Apologies.

CHAIR WIGGINS: All right. Do any commissioners have a comment or a question for the panel?
No? Okay.

Well, with that, we will move to closing remarks.

So, I want to thank everyone for participating today. I know we ran a little late, which may just signify that there is much to talk about in all of the topics that we covered today. So, thank you, everyone, for hanging in for the long day here.

And with that, I just want to comment that we'll look forward to our next meeting, which I think as Commissioner Berkovitz said at the outset of today's meeting, we're hopeful that the next one can be in person, and we can all be in the same room again. But that date will to be determined. And we'll look to Abigail for further information and polling about when that date might be scheduled.

So, with that, Abigail, I'll turn it back over to you.

MS. KNAUFF: Thank you, Dena. I now recognize the Acting Chairman Behnam to give his closing remarks.

ACTING CHAIRMAN BEHNAM: Thanks, Abigail,
first for that introduction, and then of course thanks for all your work. Dena, thank you for your work as Chair, excellent. Mr. Berkovitz, tremendous effort here in leadership. And to all the members, a really great conversation, as evidenced by the fact that we went over. But really great question and answer periods about these issues, which are difficult.

And there are so many elements that I think we need to continue discussing. And I think this committee will continue to do it, the Commission will. I'm really looking forward to more engagement with all of you. So, hope everyone's doing well. And thanks to everyone. And I will echo Dena's remarks that I hope we can be together the next time we meet in the next few months. Thank you.

MS. KNAUFF: Thank you. I now recognize Commissioner Stump to give her closing remarks.

COMMISSIONER STUMP: Thank you, Abigail. And thanks to -- again, thanks to everyone who helped organize the meeting. I'll be very brief.

I thought the discussions relative to the various developments in the carbon markets were
fascinating and really important to the work we have to
do with at the Commission, both with regards to the
contracts we currently have, that we oversee, and the
potential for additional new contracts that may rely
upon information from these underlying primary markets.
So, thank you all for putting together such a marvelous
group of presenters.

With regard to the last panel, I did want to
say to Rahul and Bill, and to everyone at the agency
who has endured the past year, I think all of the
Commissioners would agree that we've had a number of
what I can only call nail-biting days at the agency
during the course of the past year.

And to those of you who manage these markets
and contribute to the infrastructure, from the clearing
members to the clearing houses, to the exchanges, I
think it's really a testament to our system that while
it was uncomfortable on a number of different days --
none of us signed up for comfortable jobs. We knew
when we signed up for these jobs, there were going to
be days like this. We just happened to have a lot of
them in 2020.
And I'm not trying to minimize the underlying concerns. As a Texan myself, I have many family members who are directly impacted. But I do want to commend the derivatives market participants and infrastructure providers, and the Commission and the staff, for the way in which the entire situation was handled. Thank you.

MS. KNAUFF: Thank you. Thank you, Commissioner Stump. I now recognize Commissioner Quintenz to give his closing remarks.

COMMISSIONER QUINTENZ: Thank you, Abigail. No official closing remarks from me. But I just, again, would like to thank Commissioner Berkovitz for his great leadership of this -- not only the wonderful meeting, but the Advisory Committee; to you Abigail; to Dena; all the presenters that I thought did a fantastic job and put a lot of time and effort and original thought on just some very complicated issues, and laid them out for all of us to understand in a very clear and straightforward way. So, thanks again, appreciate the time.

MS. KNAUFF: Thank you. I now recognize
Commissioner Berkovitz to give his closing remarks.

COMMISIONER BERKOVITZ: Thank you. And I thank my colleagues -- thank you, Commissioner Quintenz and Commissioner Stump for your great support of this committee.

And of course, Chairman Behnam, who as I noted earlier, really has been a leader on the climate change issues for a number of years now. The groundbreaking market risk subcommittee report on climate change really will continue to inform and guide our actions as we go forward. And today's effort really builds off that. So again, I thank you, Chairman Behnam.

Obviously, Dena, Abigail, and Lucy, thank you all very much for putting this together. Dena, you did a yeoman's job today over the past six hours. I think since I've been here, this is really a very packed EEMAC meeting. I don't know if we've gone this this long before, but certainly the subject matter compelled it. And Abigail and Lucy for putting this putting this together, and all the hard work behind the scenes to organize the panels and really help facilitate these
excellent presentations.

And of course, the presenters, our friends who participated from Europe, Hans Bergman and Gordon Bennett, into the evening of their time, we thank you very much. Rajinder Sahota from California, and Secretary Grumbles from my home state here of Maryland, thank you for contributing to today's effort.

The success of the CFTC and these advisory committees -- and this is really the value. But we really depend on input from market participants, fellow regulators, stakeholders, public interest groups. We can only do our job to the extent that that we're informed of what's going on. We're a relatively small agency. And so, we really depend on information coming to us. And I thank you all.

And I thank also everybody on the third panel, the market participants, and regulators, and other perspectives of -- for the information.

I think in order to make progress on this issue, which is going to be a long-term issue across all sorts of market participants and across the globe, really it needs to be a collaborative effort. And I
thank our little microcosm today, this meeting is exemplary of the type of collaboration and people from different perspectives coming together and discussing and seeing how we can make progress.

So again, I thank everybody. I look forward to working with the committee. And we will facilitate the consideration of the proposal. Obviously, it's for the members to decide what to do. But to the extent that we can support those efforts and facilitate that, we will continue to do so.

So again, thank you, everybody. And I look forward to being together, again, hopefully in person in the fall. So, thank you. Abigail, unmute please.

Abigail?

MS. KNAUFF: Thank you, Commissioner Berkovitz. As an amendment to the roll call earlier in the meeting, I'm stating for the record that EEMAC Members Trabue Bland, Demetri Karousos, and Jackie Roberts, as well as Associate Members Susan Bergles, Sean Cota, Daniel Dunleavy, Paul Hughes, and Delia Patterson have been confirmed separately that they are in attendance for this meeting.
Thank you to all the EEMAC Members, Associate Members, and guest panelists for your participation at today's meeting.

Please stay well and keep an eye out for our survey for dates for the next EEMAC meeting in 2021.

This meeting is now adjourned. Thank you.

(Whereupon, at 3:10 p.m., the meeting was adjourned.)