COMMODITY FUTURES TRADING COMMISSION

ENERGY AND ENVIRONMENTAL MARKETS

ADVISORY COMMITTEE

10:00 a.m.

Wednesday, April 17, 2019

CFTC Headquarters Conference Center

1155 21st Street, NW, Washington, D.C. 20581

COMMITTEE MEMBERS

Dena E. Wiggins, Chair
Natural Gas Supply Association

Rob Creamer
FIA Principal Traders Group

Bryan T. Durkin
CME Group

Benjamin Jackson
ICE Futures U.S.

Demetri Karousos
Nodal Exchange, LLC

William F. McCoy
Morgan Stanley

Lopa Parikh
Edison Electric Institute

COMMITTEE MEMBERS [CONTINUED]

Jacqueline Roberts
Consumer Advocate Division of the Public Service
Commission of West Virginia

Tyson T. Slocum
Public Citizen

ASSOCIATE MEMBERS

Matthew Agen
American Gas Association

James C. Allison [Not Present at Meeting]
JCA Advisory Services LLC

Lael E. Campbell
Exelon Generation Company

Paul Cicio
Industrial Energy Consumers of America

Paul Hughes
Southern Company

ASSOCIATE MEMBERS [CONTINUED]

Vincent B. Johnson
BP Integrated Supply and Trading

Sue Kelly
American Public Power Association

Timothy McKone [Via Phone]
Citigroup Energy Inc.

Robert Gordon Mork
National Association of State Utility Consumer Advocates

Matthew J. Picardi
The Commercial Energy Working Group

Michael Prokop
Deloitte and Touche, LLP

Malinda Prudencio
The Energy Authority

1 ASSOCIATE MEMBERS [CONTINUED]

2 Richard Sandor

3 Environmental Financial Products, LLC

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5 Russ Wasson

6 National Rural Electric Cooperative Association

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A G E N D A

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P R O C E E D I N G S

(10:01 a.m.)

MS. KNAUFF: Good morning. As the Secretary of the Energy and Environmental Markets Advisory Committee it's my pleasure to call this meeting order.

This is the first EEMAC meeting with Commissioner Berkovitz as the sponsor of the Committee and we are thrilled to welcome back EEMAC Member Dena E. Wiggins, who will serve as the Chair of today's meeting.

I'd like to welcome all of our new and returning Members and Associate Members to the Committee. It's been over three years since the EEMAC's last meeting, so before we begin let's have each Member and Associate Member introduce themselves. So please give your name, your organization that you represent on the EEMAC, and indicate whether you're a Member or an Associate Member of the Committee.

When you introduce yourself, please press the white button at the base of your microphone and wait for the red light to come on so you know that the microphone is on.

Please keep the microphone only a few inches away

and speak clearly into it so the webcast and teleconference audiences can hear you.

Please note that the meeting is being recorded and it's important that the microphones captures the entirety of your remarks. Please turn your microphone off after you speak and refrain from placing mobile devices close to the microphone as it may cause audio interference.

We will begin with Mr. Wasson.

MR. WASSON: Good morning. I'm Russ Wasson with the National Rural Electric Cooperative Association, and I'm an Associate Member of the Committee.

MR. SANDOR: I'm Richard Sandor. The chair of the EFP, Environmental Financial Products and the American Financial Exchange, and I'm a[n Associate] Member of the committee.

MS. PRUDENCIO: I'm Melinda Prudencio with The Energy Authority, and I'm an Associate Member.

MR. PROKOP: And good morning. Mike Prokop with Deloitte and Touche, and I'm an Associate Member.

MR. PICARDI: Good morning. I'm Matthew

Picardi with The Commercial Energy Working Group, and I'm an Associate Member.

MR. MORK: Good morning. I'm Robert Mork with the Indiana Office of Utility Consumer Council and I'm Chair of the NASUCA Electric Committee. I'm an Associate Member.

MS. PARIKH: Lopa Parikh with the Edison Electric Institute, and I'm a Member.

MR. McCOY: Good morning. I'm Bill McCoy with Morgan Stanley, and I'm a Member.

MR. CREAMER: Good morning. I'm Rob Creamer, CEO of Geneva Trading and Chairman of the FIA Principal Traders Group. [Member]

MR. SLOCUM: Good morning. Tyson Slocum with Public Citizen, and I'm a Member.

MR. GOODENOW: Good morning. Christopher Goodenow, I'm CFTC staff.

MR. DURKIN: Good morning. I'm Bryan Durkin, President of CME Group, and I am a Member.

MR. JOHNSON: Good morning. Ben Jackson. President of Intercontinental Exchange, and I'm a Member.

MR. KAROUSOS: Good morning. Demetri Karousos, COO of Nodal Exchange, and I'm a Member.

MS. ROBERTS: Good morning. Jackie Roberts. I'm the West Virginia Consumer Advocate and I'm an officer of the National Association of State Utility Consumer Advocates, and I'm a Member.

MR. AGEN: Good morning. I'm Matthew Agen, I'm the Assistant General Counsel at the American Gas Association, and I'm an Associate Member.

MR. CAMPBELL: Good morning. Lael Campbell with Exelon Generation Company. Associate Member.

MR. CICIO: Good morning. Paul Cicio, Industrial Energy Consumers of America, Associate Member.

MR. HUGHES: Good morning. Paul Hughes. I'm with Southern Company and I am an Associate Member.

MR. JOHNSON: Good morning. Vincent Johnson, I'm with BP's Integrated Supply and Trading Business, and I'm an Associate Member.

MS. KELLY: I'm Sue Kelly. I'm the CEO of the American Public Power Association and I'm on the Junior Varsity squad. [Associate Member]

MS. KNAUFF: Thank you. I also want to confirm

that we have Associate Member Timothy McKone of Citigroup Energy on the phone.

(No response.)

MS. KNAUFF: Okay, well, I received an email shortly ago and I believe he's on the line. If our AV can unmute him, that would be great. Okay, thank you.

MR. McKONE: I'm confirmed.

MS. KNAUFF: Excellent.

MR. McKONE: I may be unmuted now.

MS. KNAUFF: Thank you Timothy.

MR. McKONE: Thank you.

MS. KNAUFF: We look forward to today's discussion and full participation by all of the EEMAC Members and Associate Members. If you would like to be recognized during today's discussion, please place your name card so it sits vertically on the table. Before you speak, please identify yourself and the organization that you represent on the EEMAC.

For EEMAC Members or Associate Members participating by phone, please keep your phone on mute and identify yourself before you speak.

With the logistics out of the way, we will now

hear from Commissioner Berkovitz, the EEMAC sponsor who will give his opening remarks.

COMMISSIONER BERKOVITZ: Good morning, and welcome to the Energy and Environmental Markets Advisory Committee meeting. I am pleased to be joining you here today in my first meeting as the EEMAC Sponsor. Prior to first joining the CFTC for the first time, I spent a number of years working on energy issues on Capitol Hill, so I have a long-standing affinity for the issues that we are going to be talking about today and within this Committee's purview.

The CFTC established this Committee in 2008, a time of turmoil in our energy and financial markets, and Congress codified this Committee in the Dodd-Frank Act two years later. Congress said the EEMAC should "serve as a vehicle for discussion and communication on matters of concern to exchanges, firms, end-users, and regulators" regarding the energy and environmental markets and their regulation by the CFTC.

The wealth of expertise and broad diversity of perspectives that the Members and Associate Members bring to this Committee will help inform and enable the

Commission to fulfill its mission to foster open, transparent, competitive, and financially sound energy markets.

I would like to welcome our new Member and Associate Members. Rob Creamer, who previously was an Associate Member, has joined the Committee as a Member. Mr. Creamer is President and CEO of Geneva Trading USA, serves on the Board of the Futures Industry Association, and is Chairman of the FIA Principal Traders Group.

Paul Cicio and Matthew Picardi have also joined the Committee as Associate Members. Mr. Cicio has been the President of the Industrial Energy Consumers of America since its founding sixteen years ago, and is a member of the Department of Energy’s Electricity Advisory Committee. Mr. Picardi is the Vice President of Regulatory Affairs for Shell Energy North America, is a member of the Northeast Energy and Commerce Association Board of Directors, and has a leadership role on the Commercial Energy Working Group.

Thanks to each of you, as well as all of our existing Members and Associate Members, for agreeing to

serve on the EEMAC and contribute your valuable perspectives.

I would like to thank Dena Wiggins for her continued service to the Committee as our EEMAC Chair. Ms. Wiggins is the President and CEO of the Natural Gas Supply Association, and has over 25 years of experience representing energy clients in federal regulatory matters. Ms. Wiggins has been involved in all of the Federal Energy Regulatory Commission's significant natural gas rulemakings in the past 20 years, including the restructuring of the natural gas industry. This is her second meeting as EEMAC Chair and we are grateful for her leadership.

I would also like to thank Chairman Giancarlo and Commissioners Quintenz, Behnam, and Stump for participating in today's meeting. Chairman Giancarlo was the EEMAC's previous sponsor, and I am very pleased that he has passed me this baton.

Finally, I would like to thank the Commission staff that made today's meeting possible, including Abigail Knauff, the EEMAC Secretary; Margie Yates and Altonio Downing; Lucy Hynes and Erica Quinlan on my

staff; and everyone else that worked so hard behind the scenes to prepare for this meeting. We come here, it looks so nice and set up and very easy, and the fact that it looks like it didn't take a lot of work obviously meant that it did take a lot of work.

I'd now like to introduce our panelists and the topics they will be addressing.

Our first panel of the day will explore how developments in the physical energy markets, particularly in crude oil and natural gas, may be affecting the derivatives markets related to these products. We will begin by hearing from Chris Goodenow, who will be discussing two reports issued last year by the CFTC's Market Intelligence Branch in the Division of Market Oversight. The first report analyzes the effect of the growth of tight oil, also called shale oil, on the WTI and Brent crude oil futures contracts and makes some interesting findings regarding the level of open interest in longer-dated contracts.

The second report assesses the recent growth of U.S. liquefied natural gas exports and the potential

impacts of this evolution on CFTC-regulated markets.

These reports reflect the important work of the Market Intelligence Branch and other data surveillance efforts at the CFTC. Objective, fact-based market analyses like those we will be discussing today enable the Commission to more effectively tailor our regulatory approach to the evolving markets.

Also on Panel 1, we will hear from Tyson Slocum, Director of Public Citizen's Energy Program. Mr. Slocum will discuss how technological innovation and regulatory changes have led to the United States exporting a historic volume of oil and gas. He will also share his view on how this growth could impact household consumers.

On the second panel, we will hear from Bryan Durkin of CME, Ben Jackson of ICE, and Demetri Karousos of the Nodal Exchange. These Exchange Members will give us an overview of the state of the energy futures markets, including the globalization of oil and gas trading and a shift toward clean and renewable energy sources. We will also hear about how the changes in the physical energy markets are generating an appetite

for new risk management tools, and the products that the exchanges are creating to satisfy this demand.

On our third and final panel this afternoon, we will hear from market participants about the availability of clearing and other services in the energy derivatives markets.

Among the core objectives of the Dodd-Frank Act, and the G-20 Summit that preceded it, are: one, strengthening prudential oversight of systemically important financial institutions; two, increasing central clearing for standardized derivatives; and three, fostering fair and transparent competition in our financial markets. Ten years after the financial crisis, our financial system is stronger and safer as a result of the Dodd-Frank Act and the regulations implementing the Act, including those promulgated by this Agency.

The G-20 Summit also sought to promote global energy security, the development of clean, sustainable energy supplies, and improved regulatory oversight of the energy markets. Over the past decade, here in the U.S. we have seen dramatic advances in energy supplies

and technologies, particularly with respect to oil, natural gas, and renewable and clean energy sources. The vitality and growth of our domestic energy industry and the improvements in the regulation of our energy derivative markets over the past decade demonstrate that we can have both strong financial market regulation and a strong energy sector. In my view, both are essential for a robust energy sector and a resilient market-based economy.

As we continue to implement the Dodd-Frank Act, the regulators should continue to work together to ensure that their respective approaches complement one another and further all of the objectives of the Act. This afternoon we will hear from market participants regarding how several of the prudential regulations may be affecting clearing and trading in the energy derivative markets.

First, we will hear from Mr. Creamer about the impacts that the Supplemental Leverage Ratio imposed by the prudential regulators may be having on the provision of clearing services for energy derivatives transactions. The Leverage Ratio requires large banks

to meet a fixed, non-risk based capital requirement in addition to risk-based capital requirements. Intended to guard against the underestimation of risk, the prudential regulators implemented the Leverage Ratio so that banks will be adequately capitalized during times of stress.

Mr. Creamer will tell us today about how the manner in which the Leverage Ratio is currently calculated may be affecting the ability of proprietary trading firms and others to obtain clearing services and compete in the derivatives markets.

We will also hear from Lopa Parikh of Edison Electric Institute, Vince Johnson of BP Energy Company, and Bill McCoy of Morgan Stanley. These panelists will present their views as to the potential impacts of certain proposed requirements for uncleared energy derivatives, including the prudential regulators' Standardized Approach to Counterparty Credit Risk proposal, SA-CCR, on the ability of end-users to obtain hedging services for physical commodities.

Although SA-CCR and the Leverage Ratio are not rules imposed or implemented by the CFTC, it is

nevertheless important for the CFTC to understand how the various regulatory frameworks affect the derivatives markets we are tasked with overseeing, and look for opportunities to collaborate with other financial agencies to maximize the overall effectiveness of these regulations.

We look forward to hearing from our Members and Associate Members on these issues.

MS. KNAUFF: Thank you Commissioner Berkovitz. I now recognize Chairman Giancarlo to give his opening remarks.

CHAIRMAN GIANCARLO: Thank you. I'm Chris Giancarlo and to coin a phrase, I'm also a Member -- of the Commission that is.

A warm welcome to all of the EEMAC Members, Junior Varsity Members, and presenters and participants, both here and on the telephone. It's good to have you all with us.

As a former Chair of EEMAC, I am pleased to see the important work of this Committee is revived again under the thoughtful and capable sponsorship of my colleague Commissioner Berkovitz.

1 And I thank Committee Chair Dena Wiggins and
2 Federal Official Abigail Knauff for their work and
3 their support of the work you are doing.
4 I really want to touch on two issues briefly, and
5 the first is the Supplementary Leverage Ratio, which
6 Commissioner Berkovitz just mentioned which is germane
7 to your third agenda item today.
8 As you know the SLR is a global capital
9 requirement for banks. It is size-based rather than
10 risk-based, and it's designed to restrain bank balance
11 sheet activity, namely lending. It requires large U.S.
12 banks to set aside roughly five percent of assets for
13 loss absorption. This is intended to supplement risk-
14 based capital requirements like the Common Equity Tier
15 1 Ratio. Banks that hold clearing customer client
16 margin in the form of cash through their affiliate FCM
17 clearing services must also set aside the requisite
18 five percent SLR.
19 Unfortunately, the SLR is being applied to an
20 entirely different activity, swaps clearing, that is
21 itself intended to steer risk away from bank balance
22 sheets. Applying the SLR to clearing customer margin

reflects a flawed understanding of CCP clearing.

The current implementation of the SLR is indeed biased against derivatives. It ignores the fact that outstanding derivative contracts in a portfolio often offset each other and reducing the potential risk exposure. It incorrectly treats the notional size of a derivative contract as representative of the total potential risk of that contract. It ignores the exposure-reducing effect of margin for clearing firms.

This Commission fully supports U.S. and global swaps reform efforts to move customer margin off the balance sheets of bank’s futures commission merchants and into CCPs. Yet applying a capital charge against that customer margin works against the swaps clearing mandate by treating FCMs as having retained balance sheet exposure.

This Commission has consistently advocated for adjustments to the SLR in its current form. Back in 2016, Chairman Massad, Commissioner Bowen and I called for reworking the SLR formulation to reduce the disincentives to the use of derivatives and central clearing. And I am pleased that the Commission

continues to speak in a bipartisan voice regarding changes to the SLR.

The second issue I want to touch on has to do with the importance of derivatives for the energy markets, and I believe this is germane to your second panel today. Last year I had the good fortune to visit West Texas. For those of you who do [not] know, West Texas is the epicenter of a stunning accomplishment of American exceptionalism, and that was the shale revolution. One of the greatest economic success stories the world has ever seen. Because of it, the United States has become one of the world's largest energy producers. And it's changed, not just the structure of global energy markets, but global geo-politics as well.

As I explained in my remarks in West Texas, our newfound energy independence is the result of a unique combination of factors, but one key factor was the role that financial hedges and commodity derivatives in enabling the industry and its financial backers to withstand the cartel squeeze by Russia and OPEC.

Without the ability to efficiently hedge depressed

energy prices and variable costs of production, America's shale producers may well have succumbed to OPEC's concerted efforts to knock them out of business. Instead, American shale producers not only survived, but became more efficient, more productive, and more innovative than their overseas competitors. And they are a shining example of the ability of American free market capitalism to benefit our generation and future generations of Americans.

I look forward to the EEMAC's agenda today, especially issues related to clearing and other services in the energy derivative markets. As we confront the challenges ahead, we will look to the thoughtful discussions of advisory committees like EEMAC and others to advise us on the way forward.

And, again, thank you Commissioner Berkovitz for organizing this very fine meeting, and to Dena and to Abigail.

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

COMMISSIONER QUINTENZ: Thank you very much.

Thank you Commissioner Berkovitz for your work in sponsoring the EEMAC and to Dena for your leadership and agreeing to Chair as well as to Abigail for all the hard work that you put into organizing today. I'm delighted to join all of you and my fellow members of the Commission for this first meeting of the EEMAC in over three years and its inaugural meetings since it was reconstituted last year. Before we begin, I'd just like to welcome all of you and all the new members. There's some familiar faces here from other advisory committees.

These committees are a great gift to the Commission because of the level of expertise and experience from which we can draw in advising us on very important issues. But that level of expertise means that all of you also have very important day jobs and are very busy. We appreciate you taking time to be here with us.

This particular committee plays an invaluable role in advising the Commission about areas essential to our core mission, including ensuring that producers, merchants, and users of energy and environmental

1 products are able to reliably access the derivatives
2 markets to manage and hedge the commercial risks.
3 There's a packed agenda before us today and I look
4 forward to hearing all three panels' discussion of the
5 developments and challenges associated with physical
6 commodity derivatives hedging.
7 In particular, the final panel is going to focus
8 on an issue critical to the well-functioning
9 derivatives markets and the availability of clearing
10 services for commercial end-user clients. As I have
11 noted previously and on multiple occasions, I have
12 serious concerns that the current implementation of the
13 supplementary leverage ratio, the SLR, is limiting
14 clients access to clearing and further encouraging FCM
15 consolidation.
16 Most recently, the OCC, the Federal Reserve Board,
17 and the FDIC proposed a new approach for calculating
18 the exposure amount of derivatives contracts under the
19 agencies regulatory capital rule. The proposal would
20 move away from the current exposure methodology, or
21 SEM, and replace it with the standardized approach for
22 counterparty credit risk, or SA-CCR, for the purposes

1 of calculating risk-weighted assets under that capital
2 rule. The proposal also incorporates a modified
3 version of SA-CCR into a firm's SLR calculation.
4 The implementation of SA-CCR for both risk-
5 weighted assets and the SLR calculations will have a
6 profound impact on the derivatives markets and as
7 currently proposed -- by profound, I do not mean
8 positive, particularly with respect to commercial end-
9 users.
10 With respect to the SLR calculation, the proposal
11 continues to require a clearing member FCM to include
12 in its leverage calculation the full exposure resulting
13 from its guarantee of a client's trade without reducing
14 its exposure by the amount of the segregated margin
15 posted by a client and then counts this margin as a
16 source of leverage against which additional capital
17 should be held.
18 This thinking ignores the fact that segregated
19 margin will always be used to absorb client losses
20 before the central counterparty looks to the clearing
21 member to absorb any residual losses. Moreover, the
22 clearing member cannot use the margin to leverage

itself under any circumstances. As a result, segregated margin is not just risk-free. It is actually more than risk-free. It is always risk reducing.

This policy is like requiring a bank to hold capital against both a mortgage and the house. If the goal of the leverage ratio is to actually calculate leverage than it should never count segregated client margin.

I recently signed a comment letter to the prudential regulators on their proposal highlighting significant concerns that unless the treatment of client margin changes, clearing member firms will continue to limit the provision of the clearing services to clients.

Let me say that I appreciate the fact that a question was included in the proposal about this topic, which I believe shows the prudential regulators willingness to listen to fellow regulators, market participants, and data analysis. Unfortunately, this question only represents one small step forward for process, whereas in other areas, the proposal contains

some surprising giant leaps backward for policy.

With respect to calculating counterparty credit risk and risk-weighted assets for commodity derivatives, the proposal would potentially increase transaction costs and diminish market liquidity for commercial end-users. This potential outcome arises in part because the prudential proposal takes the Basel Committee’s already arbitrary and inflated supervisory factors for the various commodity asset classes and “gold plates them” proposing the highest supervisory factor across all energy commodities. The Basel Committee did at least distinguished between electricity and oil and gas commodities, assigning the latter group of oil and gas a much lower supervisory factor compared to the 40 percent charge for electricity contracts.

While I have significant concerns with the quality of the data analysis or perhaps total lack thereof, which led to this arbitrary Basel Committee decision, I'm somewhat shocked with just as little explanation, the prudential proposal uniformly applies the electricity's grossly inflated supervisory factor of 40

1 percent to the entire energy hedging set. This result
2 is an enormously punitive treatment of oil and gas
3 derivative transactions that according to some
4 commenters would increase a bank's exposure
5 calculations under SA-CCR with an end-user by up to 460
6 percent. Increased exposure calculations will result in
7 higher capital charges to the bank, which in turn the
8 bank will likely pass along to the end-user in the form
9 of higher transaction pricing.
10 Gold plating a bad idea does not magically
11 transform it into a good idea. If you'd forgive the
12 analogy, if you build a ship out of gold, it looks
13 great in a dry dock, but if you put it in the water, it
14 suddenly becomes the most expensive scuba diving
15 attraction in the world.
16 The proposal must revisit the supervisory factors
17 for all types of commodities to ensure that they are
18 appropriately calibrated to the actual risks of the
19 underlying commodity and the maturity of the
20 derivatives contract. Otherwise, we risk the sinking
21 of our country’s hedging markets.
22 I look forward to hearing from all of the

panelists as well as all of our members today on how this proposal could impact their ability to efficiently hedge the risks of their core businesses. Thank you very much.

MS. KNAUFF: Thank you. Commissioner Quintenz, I now recognize Commissioner Behnam.

COMMISSIONER BEHNAM: Good morning. Thank you Dena for your willingness to chair the Committee and also Abigail for your participation as DFO.

I want to welcome everyone this morning. A lot of familiar faces, but new ones as well. And I look forward to meeting you in time today and in the future as well. I want to echo the Chairman and Commissioner Quintenz’s statements about the importance of these advisory committees. We have a diverse set of committees and they all contribute very importantly to the work and the Commission in very unique ways and we owe that to your public service, so thank you.

And I'll briefly end with a thanks to Commissioner Berkovitz. He mentioned his work on energy issues in his previous roles in the Senate but he couldn't underestimate or understate his expertise in these

areas. And I think we are all very well served by his expertise and his knowledge of these issues. And I certainly look forward to the issues being debated, discussed today and in the future that will be of great value to the Commission. So thank you again.

MS. KNAUFF: Thank you Commissioner Behnam. And I now recognize Commissioner Stump for her opening remarks.

COMMISSIONER STUMP: I want to thank everyone for being here. We are very grateful. We're sufficiently -- I have deemed spring the season of advisory committees and I actually think there's been a great benefit to having had most all of the advisory committees meet in the past few weeks because it is remarkable how many of you have spent time with us over the past few weeks helping us better understand the implications or the policies that we set. So thank you very much.

A tremendous thanks to Dena and to Abigail for putting this all together and for leading this group, and a special thanks to Commissioner Berkovitz.

I actually came to meet Commissioner Berkovitz

working on an energy derivatives matter almost 15 years ago. And at the time they set us on opposite sides of the table and I quickly learned you're far better served to be on his side of the table. So I'm very glad that I'm on his side of the table today and I look forward to your leadership on these issues.

MS. KNAUFF: Thank you Commissioner Stump. I'm now going to turn the agenda over to Dena.

CHAIR WIGGINS: Thank you. Thank you Commissioner Berkovitz, Chairman and all the Commissioners.

I'm truly honored to be here today and to be a Member of EEMAC and also to chair this meeting. Before we dive into the lengthy agenda that we have today. I just want to take a moment and personally thank the Chairman for his leadership here at the Commission and for his service and also for his prior sponsorship of the EEMAC. We very much appreciate all that you've done and also to thank Commissioner Berkovitz for willing to take this on and sponsor this committee. Thank you.

This committee serves as an important vehicle to discuss matters of concern to exchanges, trading firms,

end-users, energy producers and regulators within our energy and environmental markets, as well as the Commission's regulations of these markets.

A well-informed regulatory environment that understands and fosters open, transparent, competitive, and financially sound energy markets is crucial to our energy markets. It's also critical to the hedgers and consumers that rely on our energy markets to power our homes and our offices, fuel our transportation, and generate jobs and economic growth.

As Chair, I look forward to facilitating the discussion today and to facilitate the discussion of the Associate Members' perspectives to the EEMAC and working with the EEMAC Members to provide the Commission with feedback and recommendations that can 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, after the panel discussions, we will first take questions and comments from the Associate Members. And after the panels have presented their remarks and

their points they want to make on the panels, then we're going to turn to the EEMAC Members for their questions and comments on the panels, presentations, prepared remarks, and any feedback on the Associate Members.

So let's turn to our first panel of the day to discuss the derivatives markets' response to physical market developments. The panel is going to include, as has been stated earlier, a presentation from Chris Goodenow who was is a Market Analyst within the CFTC's Division of Market Oversight, its Market Intelligence Branch, and a statement from Tyson Slocum of Public Citizen.

Mr. Goodenow, we'll begin with you.

MR. GOODENOW: Thank you. Good morning. I'd like to thank the Chair of the Committee, Commissioner Berkovitz, the Chairman, and our other Commissioners for the opportunity to come in this morning and talk about a couple of reports that have been produced by the Market Intelligence Branch in the past year addressing these issues.

I'd like to begin by briefly discussing MIB's

1 report on liquefied natural gas developments and market
2 impacts before turning to a more in-depth analysis or
3 discussion of the MIB report on the impact of U.S.
4 tight oil and the NYMEX WTI futures contract.
5 Before I begin, I would like to point out that
6 these reports were produced by staff of the CFTC. Any
7 views expressed in these reports are solely those
8 opinions of staff and do not necessarily represent the
9 position or the views of any of the Commissioners or
10 the Commission itself.
11 All right. So MIB's report on liquefied natural
12 gas developments and market products was published on
13 May 16th of last year. In preparing the report, staff
14 reviewed several studies conducted by public and
15 private sector entities in order to gain some insight
16 into fundamental factors that are driving changes in
17 liquefied natural gas markets and any subsequent
18 potential impacts on natural gas derivatives that are
19 subject to Commission oversight.
20 So the report itself is a summation of themes
21 found in the various assessments that were conducted by
22 market participants.

1 And in the review, we have three main takeaways.
2 The first is that U.S. liquefied natural gas exports
3 are projected to have the most rapid growth rate among
4 all exporting countries in the world. And they will
5 also enjoy a price advantage in the growing global
6 marketplace or at least in the near term due to low
7 domestic natural gas prices.
8 Just to give some color to that general statement,
9 U.S. export capacity, assuming all the projects that
10 are currently in the pipeline, if those are finished on
11 time, export capacity is expected to double in 2019
12 alone and recently the Energy Information
13 Administration had forecast that U.S. exports could top
14 as much as 14 BCF a day by 2020 and could run as high
15 as 28 BCF per day by 2050.
16 The second thing that staff found in conducting
17 their research was that LNG export growth may put some
18 upward pressure on domestic natural gas prices, but
19 these estimates vary rather widely, some were
20 negligible impact, some were somewhere between 9
21 percent and 20 percent. It's important to note
22 however, that as subsequent studies have been done over

time, as we look at how the natural gas markets react with price sensitivity, technology changes, U.S. production growth and supply estimates, the estimates of any potential impact on domestic natural gas markets had been trending downward.

And then the last thing is that as the LNG markets mature and is more pricey, more contracts rather, start to be priced against natural gas instead of say oil, this may drive increased participation in the derivatives markets as people look to hedge price risk accordingly.

Now having said that, I'll just turn to the Tight Oil Report and this report was published on September 6th of last year. And while there's been a lot of discussion on the impact that tight oil production has had on the United States in terms of energy policy, trade policy, economic growth and et cetera, there isn't really a lot of discussion as to what these changes in the physical market and may have had on the derivatives markets.

So to that end, staff conducted an examination of activity in the NYMEX WTI futures contract from 2003 to

about March of 2018, as the publication of the report, just to see what if anything had happened in the derivative space. Overall, what staff found was that across all listed expirations that volume and open interest in the contract had grown and they remained robust.

However, on a more granular level, we discovered that open interest in NYMEX WTI futures that are set to expire five or more years into the future from that day's date had declined and that's primarily due to the increased production from U.S. tight oil, U.S. shale oil plays. However, there may be some secondary effects that play due to changes in the overall level of oil prices and potentially some regulatory impacts. And ultimately, from the Commission’s perspective, the general point of behind these sorts of studies is just to see what impact changes in the markets may have had on the functionality and the price discovery mechanisms of the NYMEX WTI contract over time.

So it sort of set the stage. This graph displays data collected by EIA on U.S. crude oil production by various sources. The blue shaded area represents tight

oil production in the United States across all plays for what EIA has data and the red area represents the rest of U.S. oil production and that conventional onshore and offshore oil wells. Those are measured on the left axis. The right axis shows tight oil production in the United States as a percentage of total U.S. crude production.

And the general takeaway here is that you can see the tight oil production has really taken off. That as of February 2019 it was estimated that U.S. tight oil production accounts for roughly 63 percent of all the crude oil that's produced in the United States and that's up from about 9 percent in 2008, which is roughly when the shale oil boom is agreed upon to have started.

So turning to our next chart, this chart is just a measure of daily volume across all listed futures contracts in the NYMEX WTI market, again from 2003 to early 2018. The general takeaway here is that while average daily volumes, or rather -- well daily volumes vary from day to day, overall the market's grown significantly and it remains rather robust and active.

And looking at open interest instead of volume, this graph shows total open interest in the NYMEX WTI contract. It's grouped by years to expiration. So the bulk of the contract and the bulk of the growth in open interest in the contract is in futures contracts that are set to expire within 12 months of that day's date. That's the blue area.

We've also seen a good amount of growth in contracts that are set to expire within 13 to 24 months, which is the red area in the graph. And we've still seen a good amount of growth in contracts that are set to expire within 25 to 36 months, which is the green area. But looking at the market in aggregate and this sort of fashion does obscure what's going on in different strata.

So this next chart takes a look at open interest in contracts that are set to expire five or more years from the day’s date. And what we see here is there's been a dramatic decline in the amount of open interest in these contracts starting in 2010.

And just a couple points of clarification before I go on. You'll notice that in each calendar year, open

interest builds to a point and then drops off. Generally speaking, open interest in any futures contract builds as it approaches the front end of the curve. The drop off that you see in the data on every calendar year is that because this is a five-year forward series, when you reach the point where a contract stops being five-year forward and in turns into a four-year forward contract, that data will fall out of the series.

So generally speaking, a lot of the open interest in these five-year forward contracts happens to be in December. So when the December contract ceases to be five-year forward and becomes four-year forward, you see a drop in open interest. That's just a function of the way we've grouped the data.

So as recently as 2009 open interest in these five-year forward contracts was as high as 46,158 contracts. So that's about 46.2 million barrels of oil that's accounted for in these positions. However, what the declines since the start of 2015 open interest in these contracts has failed to eclipse 3,500 contracts in any given year. So we've gone from 46.2 million

1 barrels of oil, approximately, to just about three and
2 a half million in terms of size.
3 And so, our first thought was perhaps this is
4 price related. So if you look at this graphic here,
5 this is the open interest from the previous slide and
6 we've overlaid the prompt month daily settlement price
7 of the NYMEX WTI contract, which is the salmon hued
8 line I suppose, and the five-year December daily
9 settlement price, which is the black line.
10 And what this graph seems to imply is that first,
11 regardless of the degree of backwardation or contango
12 in the market, there's been a healthy amount of open
13 interest five years down the curve. But the drop in
14 prices that we saw, particularly in the 2014-2015
15 timeframe does not seem to have changed anything. So
16 if you look at the graphic, open interest came down in
17 2009. When oil prices in 2010 rebounded into the $80
18 to $100 range throughout 2010, open interest in these
19 five-year forward contracts never returned to the 2009
20 level.
21 And while the decline abated somewhat in 2011 and
22 2012, as you can see in the graph, regardless of where

the price is, open interest just kept falling off to the point where there are approximately, as of March 1st this year, there were approximately 2,200 contracts that we're open five plus years into the future at a price level of 56. And as this graph indicates, it's a little difficult to pick out, but if you were to draw a line back from 56 you'd see that previously in the past $56 prices equated to about 22,000 open contracts.

At that point staff thought, well, let's see what the Brent contract looks like. You can download daily reports on publicly available open interest volume and settlement prices from ICE. So we replicated the analysis on the previous slide to look at the Brent markets. And again, you see similar patterns in the sense that open interest peaks to a point and then drops off as the contracts rollout of the five plus forward series.

What you don't see in the Brent space that you do in the NYMEX WTI space, is a steady, persistent decline in the five-year forward contracts. The magnitude of the ICE Brent open interest does change year-to-year and it's typically between three and 9,000 contracts at

any given point in time, but there isn't the same study decline that you see in the NYMEX.

So that sort of suggests that there may be a structural difference between the two physical markets. Brent being more global with the fact that most of the world still relies on a conventional oil market structure; where you find a play, you set up your wells, you punched the hole in the ground and you've got oil coming for a longer period of time. Whereas, tight oil is typified by -- or rather, it's a much shorter production life cycle.

And since the tight oil is a unique feature of the U.S. market, we're positing that the difference between how the two contracts are being used is, in fact, related to the expansion of tight oil plays in the United States.

So one last thing we thought we'd do is using data that's available at the Commission under Part 17, staff decided to examine the behavior of reportable traders in the four trader categories that you would see in our Disaggregated Commitment of Traders Report; so producer merchants, swap dealers, managed money traders and

other reportables.

And while all four categories are represented in this chart, which shows the net futures exposure of traders in those categories, the thing that stood out to staff was the behavior of producer merchants, which is represented by the blue shaded areas in the above graph. Producers' involvement in these long day contracts was pretty healthy until about 2010 at which point, again on a net basis, the producers seem to have stepped away from the back end of the futures curve.

Since the collapse in prices that we saw in 2014-2015, any subsequent uptick in open positions that far down the curve has tended to coincide with producers coming back into the market. And it was at this point that staff reached out to market participants who were willing to speak with us in the -- that would be classified as producer merchants or swap dealers. So on the producer merchant side, we're talking about a exploration and production firms, marketers, merchandisers, some fully integrated oil companies, and then swap dealers.

The conversations that we had with the producer

merchants indicated that their responses indicated to us that this was in fact a tight oil phenomenon. That they had all expressed that as tight oil plays became a larger and larger part of their producing assets, their portfolio of producing assets. The average life cycles were falling and the amount of oil they had to sell many years into the future was falling to the point where some of them, while they had oil to sell anymore, they did not have enough oil to justify going into the market to build hedges.

It was also pointed out that part of this, too, is that with the price sensitivity of a tight oil play where you can respond rather quickly to changes in price as to whether or not it meets your break even and it's profitable to continue producing is in itself a form of hedge. Rather than engage in futures contracts where you might have to manage margin, they can just shut the wells off until they have a more profitable position.

Also, the rapid deployment capabilities of tight oil fields is also alleviated or rather it's adjusted their production decisions. And the other thing that I

thought was kind of interesting is at one point there was a marketing firm or merchandising firm that told us that while they do occasionally have customers who come in and are looking for longer term oil contracts, the marketer won't engage in contracts that are longer than three years in duration because with the production variabilities afforded by tight oil. You might have a customer that wants to buy oil for the next five years, [but] you might not necessarily have a consistent source to provide oil to that customer four or five years from now.

On the swap dealer side, the discussions that we had with them, they indicated that the lack of activity was sort of two pronged. Part of it was a change in client needs and part of it may or may not have regulatory implications.

On the client side, they indicated that they just had fewer people who were coming in looking for long-dated exposure to the market. And even for those who did come in looking for it, with the capital requirement changes that had been imposed on some of the banks, they indicated that when those costs were

1 baked in to the deals they had to provide the clients,
2 they had some clients that looked at those cost figures
3 and said, I'm no, I'm not interested in doing this.
4 It was also pointed out to staff that
5 traditionally in the oil market when we had the more
6 conventional development and that was the only game in
7 town, physical oil markets have a natural short. E&P
8 firms have oil coming out of the ground that they need
9 to sell or perhaps that they'd like to hedge price risk
10 for.
11 There is not necessarily a natural long that far
12 down the curve anymore, that some of the long activity
13 on the back end of the curve in years gone by was
14 provided by folks that were, had concerns about peak
15 oil, that were willing to buy an oil contract that
16 delivers five years from now because yes, it might cost
17 me $80 to buy this today, but I think we're going to
18 run low on oil or perhaps run out of oil and I'm going
19 to be able to offload this to somebody else who really
20 needs it for 300.
21 With the developments in U.S. crude production,
22 it's kind of clear that if we are going to run low at

some point in the future, that point is, it is a ways off. And so, for currently peak oil speculation isn't as rampant as it used to be.

And this does sort of raise questions. Should conventional oil plays make a resurgence and become a larger part of overall U.S. production? The degree to which the market can meet the needs of a conventional oil producer, who suddenly has oil to sell and might want to build hedges, will there be long side activity to help them out?

And so in conclusion, just to recap, staff discovered that the short production horizon of tight oil plays has reduced the need for futures contracts that are set to expire five or more years into the future. And that at the same time, while there isn't anybody to sell, it's unclear as to whether or not there'd be enough activity on the long side to meet those needs.

And so, as I mentioned, there's a number of questions and a number of further avenues for investigation, but if there is the resurgence in conventional oil production, how was the derivatives

1 market going to respond? Can it meet the needs of
2 people that are looking to sell oil that far into the
3 future?
4 The other question, which at least to me is a
5 little more interesting, is does the lack of long-dated
6 liquidity potentially impair the WTI contracts ability
7 to act as a global benchmark price? With the
8 reduction, or rather the elimination, of the oil export
9 ban in the United States and the fact that we're
10 continuing to export additional amounts of oil, or more
11 and more oil moving forward. This is occurring at the
12 same time as there are some concerns about the long-
13 term viability of oil production in the North Sea,
14 which underpins the Brent contract. So that does
15 provide an opportunity for the WTI contract to have a
16 much larger global reach than it currently does.
17 However, while there may be concerns about
18 production coming out of the North Sea, the rest of the
19 world still operates on a conventional oil production
20 basis, whereas the U.S. is operating on increasingly on
21 a tight oil, shorter production lifecycle. And so,
22 that sort of duration mismatch in terms of needs and

1 availability may impair the price discovery function of
2 the contract, but it may also impair the ability of the
3 contract to sort of expand its reach globally.
4 Thank you again for the opportunity to address the
5 committee and I look forward to dealing with you on the
6 Q and A session.
7 CHAIR WIGGINS: Thank you. Mr. Slocum.
8 MR. SLOCUM: Chris that was an outstanding
9 presentation and I got to tell you, the Market
10 Intelligence Branch, if y'all haven't checked out the
11 section of the website of the CFTC has been producing
12 number of really good reports on a pretty wide variety
13 of subjects. And so, as a researcher, I'm very
14 appreciative of the work that you and your team are
15 doing. So thank you.
16 And I also am very appreciative to Commissioner
17 Berkovitz for his leadership in sponsoring this
18 committee. I'm really admire your leadership and your
19 vision. And so, thank you very much. The Chairman and
20 the other Commissioners, thank you very much for your
21 input and your help with the Committee, and of course
22 the CFTC staff, which is just outstanding. So thank

you very much.

So I'm Tyson, I'm with Public Citizen, we represent household consumers. And when I got my start working on energy market issues 19 years ago chasing Enron around California, policy was really -- policy on hydrocarbons was really defined by scarcity, right? We never had enough and our policies sort of reflected that collective panic. And there is no question that the fracking boom has changed these dynamics fundamentally and moved us from the panic of scarcity to now abundance.

And it was really the combination of environmental rollbacks primarily the 2005 Energy Policy Act, which nullified a series of fast moving lawsuits around the country, but particular some in Arkansas where communities were providing evidence of contamination of water from the injection of toxic fluids as part of the fracking process. Where communities were demanding that the federal government regulate this, Congress got out in front of it and exempted the injection of toxic fluids in the fracking process from compliance under the Safe Drinking Water Act.

There's no question at all that that significant regulatory rollback had a direct influence on providing certainty to the industry that they didn't have to comply with safe drinking water laws and allowed them to pursue fracking.

And of course, the second component was the technological innovations, particularly around horizontal drilling. And we're seeing the results. The United States is the largest oil and natural gas producer on the planet today. There are environmental impacts. I raised these in testimony before the United States Senate just a few months ago, where I raised concerns about the impacts of the fracking boom on our climate, on the environment.

But the other big consideration here is with this fracking boom we are now moving towards building infrastructure to prioritize exports. The oil and gas industry frustrated by historical limits on their ability to sell their domestically produced oil and gas for higher prices abroad have been successful in getting bipartisan support to lift the crude oil export ban signed by President Obama in 2015 and to take a

variety of different steps to expedite liquefied natural gas exports.

And I think that the Market Intelligence Branch reports on both the -- you know, looking at the impacts on crude oil and natural gas. I think are underscoring some of these concerns that we as a consumer group have about how the fracking boom and the resulting export boom are fundamentally reshaping derivative markets under the CFTC’s jurisdiction. And we have concerns about what the impact is going to be on end-users’ access to these markets as these benchmarks are shifting away from, you know, the historical benchmarks tied for domestic consumption, prioritizing the export of these products. We are concerned and we're very appreciative that the Market Intelligence Branch is starting the process of looking into this and quantifying it.

And I'm very glad that we've got other interests of end-users on the advisory committee. We've got Robert and Jackie representing state consumer advocates, which are incredibly important to represent the interests of household consumers on a variety of

1 different issues. And we've got Paul representing
2 industrial consumers and I'm very interested to hear
3 what the consumer advocates, and particularly Paul,
4 what their experiences are in terms of seeing the
5 changes in the markets. The Market Intelligence Branch
6 Report had a few more years of experience on the wild
7 differences we're seeing because of the fracking boom
8 with oil and natural gas exports sort of just
9 beginning, I think, it's going to be important for the
10 CFTC to get out ahead of any potential disruptive
11 changes that we have to derivative markets as a result
12 of the export boom.
13 I don't think that lawmakers in Congress are
14 really paying enough attention to just how disruptive
15 exports can be. When I testified before the Senate a
16 few months ago, I pointed to what's going on in
17 Australia today. Australia oriented much of their
18 domestic natural gas production for export on the less
19 populated west coast of the country.
20 As a result, Australia is now the second largest
21 natural gas exporter on the planet, and it has resulted
22 in massive physical shortages and huge price spikes for

the populated east coast of Australia to the point where Australia is now building LNG import terminals to serve its domestic supply needs. Because Australia gave no thought to the long-term implications, and you know, the United States continues to approve LNG export terminals on a case-by-case basis with no break on what happens if all of those facilities are actually operational and what the impact will be on domestic prices and domestic supplies.

So, again, I’m really appreciate the work you're doing and I think it's starting the important conversation of making sure that the Commission is several steps ahead of the market impacts from the transformative changes we're seeing in oil and gas fracking and moves towards exports.

Thank you very much.

CHAIR WIGGINS: Thank you both very much.

We will start with comments and reactions from our Associate Members. So if you have something you'd like to say, if you'd put your name card up and we'll see how how far we can get, I think my main role today is to serve as a traffic cop or maybe a referee to key off

of Sue's comments.

Just try to keep us on schedule here. We do have a lot of people and a lot of material to cover. So I think what we'll try to do is cover the Associates' remarks and about 15 minutes and then turn to the Members for the final 15 minutes of this panel.

So Michael, I think I saw your card up first.

MR. PROKOP: Thank you Dena. And thank you gentlemen, what a great presentation that was. We'll try to behave ourselves, Dena, so you don't have to arrest us.

Christopher, just a quick comment. One of the things I'm looking at your graph of the decline in long-dated open interest, maybe unrelated to prices. A little walk down memory lane, the EEMAC had its founding in 2008 when oil prices reach $140 a barrel, when Bart Chilton asked me to join this committee originally back then, and you've kept me around ever since, so thank you very much.

But the makeup of the EEMAC back then was very much different at the time. I was trying to jot down for memory some of the old folks I remembered; B[ank]

of A[merica], Merrill, Citibank, Goldman Sachs, Morgan Stanley -- Morgan Stanley at the time, one of the largest asset holders in the energy industry of production assets and infrastructure assets. So that's changed. We asked ourselves why has that that makeup changed?

One of the things I would love to see on a graph like this is an overlay of the regulatory impact on a lot of these prices. In 2008, we saw the financial crisis happening. Shortly thereafter, 2010, the onslaught of Dodd-Frank and the great regulatory uncertainty at the time, which I think we're still dealing with today by some of the opening comments about reserve margin and things like that -- that are keeping a lot of these financial institutions out of the marketplace to help finance these long-term deals.

I was a broker for 16 years, so for the duration of a lot of this stuff all the way through the two thousands et al. And what we saw was as these entities exited, the market did tighten up. There was more certainty, better clearing, better price discovery in the short-term rather than long-term because there

1 wasn't enough liquidity back there.

2 So my submission would be to the group to consider

3 what we can do possibly to again support more liquidity

4 and more financial backing into the marketplace to do

5 these longer term or deals.

6 Thank you.

7 CHAIR WIGGINS: Thank you. Paul.

8 MR. CICIO: Thank you very much. I really

9 appreciate, Chris, your report. As manufacturing

10 companies that use substantial quantities of natural

11 gas and electricity, we are very concerned about what

12 we would describe as excessive LNG export. The report

13 that the CFTC did was very good, but it misses a very

14 important aspect that is unique to the global LNG

15 market.

16 The global LNG market is not a free market.

17 Almost all of the buyers of LNG are state-owned

18 enterprises or they are foreign utilities. Their

19 mission is to provide molecules for their country and

20 they have automatic cost pass-through. Now this can

21 become a problem when there is more global demand than

22 there is supply, which we know there will be periods

for where that will happen and that means then these buyers, state-owned enterprise and foreign utilities, can come into the U.S. market and buy and put price pressure and volatility on U.S. prices.

Also what's missing in the report is that 88 percent of the LNG buying countries are located in the northern hemisphere, which means they have winter when we have winter. So they're going to be pulling on our natural gas resources when we need it most. The implications, of course, are significant because of our, not only gas for all the types of consumers, but we are becoming more gas dependent in the power sector, and prices of natural gas and electricity are priced on the margin. So when they do, when this does or can happen, it can have incredibly significant impacts on prices and volatility.

Australia was mentioned, specifically the domestic market in Australia is no longer a domestic market. It is priced on the Asian LNG netback price. So what Australians pay is the price that is delivered in Asia, minus the freight, minus to liquefaction, and that's what the domestic price.

Their prices in Australia used to be a domestic price. Domestic supply versus demand equals the domestic price. Now it is determined by LNG exports. This is the kind of thing that we as manufacturers are concerned about happening in the United States.

So I know I've put a lot on the table here, but I just wanted to share a perspective from energy intensive manufacturing companies. Thank you.

CHAIR WIGGINS: Thank you. Vincent.

MR. JOHNSON: Hi. Vincent Johnson BP, again.

First Chris, I just want to echo, I think the reports are fantastic, but I want to reiterate what Michael said. I was very glad to hear that because when I looked at the report and I saw that some of the regulatory financial regulations where like a secondary cause, I would say from BP’s perspective, we saw the banks -- I mean the competition, we saw them leave the markets and that gave us great concerns. And also the same with customers and customers not wanting to hedge out long-terms, mostly because of the cost and the complexity and the uncertainty. And I know what the timing with the drop offs, the different periods in

2010 and 2015. So I think from our perspective we saw that also, and we thought maybe that was maybe not secondary, but that was more of a significant cause potentially more around the uncertainty. Not that whether it was good or bad, because of Dodd-Frank did a lot of positive aspects of it, but the uncertainty in the markets for that time, whether it was here or in Europe, I think, caused great concern.

And one other quick remark, I'd be interested Mr. Slocum, in your remarks around the exports with the part of it around the crude, because the crude market started in 2015 with the exports and it seems like the price that -- we've had drops, significant drop in prices, but it didn't seem to have the same effect that I understand from some of the reports that people are concerned with on liquid natural gas markets.

I would like to hear your perspective.

CHAIR WIGGINS: Tyson.

MR. SLOCUM: Well I think, you know, oil is still a globally price commodity. So you know, the folks in the market remain concerned about issues in the Chinese economy and other breaks on a global demand that

weren't present during the times when we saw a big run up in prices.

So, you know, we were opposed to the lifting of the crude oil export ban because we saw it as an opportunity for oil companies to sell their product for higher prices abroad. I don't think that that has come to fruition yet, but I think that the volumes of exports are still held in check by limitations on infrastructure to facilitate greater exports. And we're seeing that case in the Permian, which is driving a lot of the increase in domestic production and there still isn't necessarily adequate export related capacity there.

We're also seeing more proposals for a very large crude marine ships to be able to dock mainly in the Gulf of Mexico off of the Texas and Louisiana coasts. And so, our export capacity is still not where I think the industry would like it to be. So we continue to have concerns about the long-term impact on prioritizing crude oil exports for -- crude oil production for export and the impact on a domestic prices. I don't know if that answers your question,

sir.

MR. JOHNSON: No, no. Thank you very much.

MR. SLOCUM: Okay.

CHAIR WIGGINS: Lael.

MR. CAMPBELL: Thanks Dena. So great report. Really appreciate it and I really liked your point about just the, the ability of these shale plays to respond very quickly, to turn that spigot on and off in response to price signals, really is a natural hedge that the producers have. And because of that, I don't actually share some of these same concerns that were at risk anytime soon of prices going up because of the producers, these shale plays, being able to just turn that spigot on if prices do start to creep up even a little bit.

I wish that weren't the case. Hopefully, I'm wrong. And the reason I say that is because, you know, these low natural gas prices that are extending out for the foreseeable future are really having a detrimental impact on electric generation business. Because generators that participate in the competitive markets are participating in markets where the price in those

markets is essentially set by gas, the cost to run a gas generator.

And with gas prices so low, those prices are very low and it's squeezing other types of generation resources out of those markets. And because their costs to operate like a nuclear generator and other types of generators, their cost to operate is significantly higher than the cost of these gas plants that are setting the market price.

So, you know, one of the big concerns electricity space is what does that mean over time? You know, what does that mean for the resilience and the diversity of our electric grid? If all the sudden the grid is reliant on one form of generation and other types of generation that have different attributes; environmental, fuel security type attributes, are no longer there and are no longer there that the same level as they are today.

So that's something that we're struggling with in the electricity space. And a lot of it has to do with some of these, you know, long-term price signals we're seeing in the gas market. So I just want to bring it

to that point.

CHAIR WIGGINS: Tyson.

MR. SLOCUM: I just wanted to respond to a couple of the comments that were raising a point, I think that isn't the lack of liquidity in these longer term contracts, the result of Dodd-Frank or other overzealous regulation, I guess and that banks were forced out of the market?

And I just want to say a point of clarification first. I think the report does an excellent job of taking into account regulatory changes and makes very clear from the data that the driving factor in the change in liquidity of these long-term contracts was not regulation but geology. The fundamental differences that fracking pose in terms of the steady depletion rates compared to conventional production. But also this argument that the banks were forced to exit the system perhaps because of regulation, I think, is not entirely accurate.

The bank's exited the system because they couldn't manage the risk on their books. The banks are only still in business because of the forced generosity of

the American taxpayer who bailed them out. We had the greatest financial crisis in history because the banks didn't even know what their own risk was on their own books. Right.

And since the exit of the bank, some of them have definitely returned to the market, but early on in their place came some of the commodity trading houses. We've got a representative here, the Commercial Energy Working Group, which counts at least one or two of them, including Vitol, as their members. And these entities have come in and replaced some of the Wall Street institutions in these markets to a certain degree.

So I just take issue with a blaming regulation for any issues and liquidity. The problem was that banks failed to understand their own books and failed to mitigate their own risks. Thank you.

CHAIR WIGGINS: Thank you. I think we have one Associate Member on the line. Do you have a question or comment?

MR. McKONE: No, I do not. Thank you.

CHAIR WIGGINS: Thank you. Any other questions or

comments from any of the Associate Members? If not -- oh, I'm sorry.

MR. HUGHES: Real quick and without taking a side one-way or the other. I think all this discussion, to me, has done is highlight the uncertainty that still exist somewhat naturally in the market and emphasizes the importance that for end-users we still have cost effective access to hedge the risks for our customers and rate payers. I think that needs to be stated.

CHAIR WIGGINS: Thank you. You get the last word.

MR. PICARDI: Thank you and thank you for the report and I just wanted to reply quickly to a something Mr. Slocum said. Our group, Commercial Energy Working Group, we're not the group that represents the swap dealing entities that are in the market. So I just wanted to make that clear. That's not what part of our group is.

And in terms of watching some of the phenomena is going on with these things, we as a group, are sitting back and watching kind of how the markets are responding to the changes that the export of LNG is producing to the markets. And want to make sure the

regulations that are put in place that going forward don't interfere with the new structures that might occur to allow for hedging of that activity as it goes forward in whatever form, whether it reaches the levels that are forecast or not.

And I think the last footnote I'd make to that, is that I don't want people to leave with the impression that the regulation changes in Dodd-Frank has not had some impacts since we saw a significant move from the swaps market to the futures market shortly after Dodd-Frank was passed when we were working on the definition of swap. So maybe these overlays don't include some of that but certainly discounting it totally doesn't make sense either.

Thank you.

CHAIR WIGGINS: Thank you. Let's turn to the EEMAC Members. Does anyone have any comments or questions?

(No response.)

CHAIR WIGGINS: I'm going to put my own card up. I'm going to take off my hat here for a moment as the Chair and put on my hat as the President and CEO of the

National Gas Supply Association. Just to talk a little bit about some of the comments [that] were made.

We obviously believe and I think the data points it out, that in this country right now we are awash in natural gas. We are very blessed with robust supply and robust production.

If you look back in time, for example, in 1966 there were projections that we had about 698 TCF of gas. Well, of course, that has changed dramatically and it's all thanks to the shale revolution, which is really thanks to a technological revolution. And the latest resource estimates from the Potential Gas Committee are 2,800, a little over 2,800 TCF of gas.

We've got a lot of gas. Our producers are being able to produce that in record quantities. And this is not a static number. And our members tell us that as much gas is being produced today, they were out in the field and there are technological innovations that are coming along every day, so this is not a static number. This we believe and the history bares it out, will continue to improve and increase as time goes on.

The other aspect of this is, industrials are

seeing this, as well. There are industrial entities in this country that are making enormous investments in plants and facilities based on their belief that natural gas prices will remain acceptable to them for investment purposes for some time in the future.

We have a consultant who looks at this every year for us and they don't look at just announcements of industrial projects, they try to make informed decisions about projects that really will go forward and our consultants tell us that they're going to be 46 major industrial projects coming online in this country from 2018 to 2023. It's a lot of money. It's $79 billion, it’s 32 projects, seven expansions, seven restarts and they're already have been 33 completed projects from 2015 to 2017. So industrial and manufacturing companies in this country see this in large measure of the way that we do. There is a lot of gas to go around.

Also, we don't predict prices, but if you look at EIA’s numbers, EIA’s forecast shows that natural gas prices remain below $5 MBTU through 2050.

Some of you know I used to represent industrial

end-users. I now represent producers. I have the advantage of having a consistent statement that I've been saying for probably the last 20 years. I think what we want is prices that are low enough so that industrials can be successful and high enough so that continued exploration and production can go forward and that's where we are. Our producers are getting better and better at producing gas that's lower and lower prices.

I also want to point out -- there were a couple of statements made about Venezuela. Venezuela is a very, very different market from what we have here at the United States. I understand there's some challenges in Venezuela. Venezuela has production on one side of a vast country and a population center on the other with very little infrastructure connecting the two.

Anybody who has looked at a[n] interstate pipeline map of the United States knows it looks like a spaghetti bowl. There is a lot of pipeline infrastructure that connects the various portions of our supply to the markets that use them. And our supply portfolio is much more geographically diverse

than it used to be. It's not just the Gulf Coast. It's the Shale and Marcellus, it's Utica, it's Permian. We have a very diversified supply and a lot of pipeline infrastructure to get it to market. We could use more pipeline infrastructure, but there is a lot that is there now to help us.

One final point on this, is that it's DOE's job to look at these LNG export applications and approve them and provide the export license; FERC actually approves the facility. Looking at -- as some people do, the nameplate capacity of all of these projects and predicting that that total will represent the amount of natural gas that will go out of this country as LNG exports is meaningless, because not all of those projects will be built and LNG is a global market.

These people who are looking at investing in these projects here in the U.S. are looking at investing billions and billions of dollars and they're not going to do it unless they believe there's a market. I firmly believe, and again EIA's projections will bear this out, that not all of these will be built.

Yes, the percentage will go up of what we are

exporting. We're currently exporting something like I think in the range of five or six percent of our total demand for gas in the United States. Percentage-wise it will go up, but it will still remain a relatively small number and we will continue to have the production to back it up.

I'll take off my NGSA hat. I'll put back on my chair hat and Tyson I think you had something to say, and Jacqueline as well.

Tyson?

MR. SLOCUM: Jackie can go first.

CHAIR WIGGINS: Jackie?

MS. ROBERTS: Hi Jackie Roberts, West Virginia. And I feel like live in the vortex of a lot of these issues. We are a coal state and I'm not afraid of heavy reliance on one form of a fuel to produce energy. We've relied on 90 percent coal for decades and have survived. That's turning now where there's much more reliance on natural gas. As people have pointed out, where natural gas is displacing coal in economic dispatch order, and we don't see that changing.

We have not seen any disruptions in the energy

1 markets or the energy supplies because of that. West
2 Virginia is in the PJM market, they're clearing
3 capacity at about a 30 percent reserve. So I
4 understand a cold winter -- as Demetri and I were
5 discussing could affect how we view the LNG export and
6 its effect on domestic energy production. I'm not
7 expecting that to be an issue going forward. I think
8 we do have a reliable grid.
9 We do see -- the report, I thought it was
10 astonishing and it really validated a lot of what we
11 see boots on the ground in West Virginia, because we
12 have, as you know, a huge shale play. I will say that
13 half of our state has no access to that gas. Half of
14 our state is still getting gas from the Gulf because
15 there's no infrastructure to move it.
16 And I think as we saw with the buildout in
17 transmission with the advent of the RTOs in the ISOs, I
18 think the shale gas is going to provide the incentive
19 to build out transportation for gas domestically. And
20 we're starting to see that in our little state of 1.8
21 million people. Hopefully, we can all reap the
22 benefits of the gas that's in our state, but so far

that that hasn't happened.

I do think that the last thing I want to say is that what we see in West Virginia with the shale gas is that there are limitations on the leases the producers have. Where if they get a lease, typically they have to drill within two years or they lose their rights to that. So you see a lot of drilling and capping going on. So many wells are drilled, but they're not producing. And that backlog of non-producing wells, I think, is going to serve not only the domestic increase in use but the export of gas, as well.

Thank you.

CHAIR WIGGINS: Tyson.

MR. SLOCUM: I just had a clarifying question.

So the Commercial Energy Working Group, thank you for correcting me that your members are not swap dealers, but are the members of the Commercial Energy Working Group or is it publicly available who your members are?

MR. PICARDI: No, it's not.

MR. SLOCUM: Could you tell us who your members are?

MR. PICARDI: No.

MR. SLOCUM: If you're saying your members aren't x, but then you're saying -- so you're not willing to disclose who you --

MR. PICARDI: We’re end-users and we've gone around on this before, so do you want to do it again?

MR. SLOCUM: Well, we're -- it’s a new advisory committee with new members and I just wanted to clarify that --

MR. PICARDI: -- you’re a member from here before. Nothing’s different.

MR. SLOCUM: Okay, thank you. All right.

CHAIR WIGGINS: Are there any additional Members who would like to make a comment or ask a question?

Oh, I'm sorry. Go ahead Rob.

MR. CREAMER: So I’m Rob Creamer with FIA PTG.

I just wanted to make a comment about the banks or reaction Tyson to your comment about the banks kind of causing the financial crisis. I think it's dangerous to throw all activities of banks into the mix, that the function that banks provide in backdated tenors and commodity markets is very important.

1 Principle trading firms largely do not participate
2 back there. We don't have the balance sheet to do it
3 and I would really want to spend a lot more time with
4 that. A very thoughtful, and I thought very well done,
5 presentation to understand those issues better because
6 I think regulation has a large part to do with why
7 we're not seeing quality markets. And when I say
8 quality, affordable, economical markets for people to
9 engage and to hedge risk beyond the three-year tenor.
10 CHAIR WIGGINS: Mr. Chairman.
11 CHAIRMAN GIANCARLO: Thank you. I just wanted to
12 make an observation.
13 I must say I was very pleased to hear Mr.
14 Goodenow's report described with words like
15 astonishing, excellent, thoughtful, and well done.
16 When we set up the Market Intelligence Branch two
17 years ago, it was just such an intention to be able to
18 develop and print out such objective data-driven
19 analysis of market activities and market developments
20 for use by market participants, for our own use at the
21 Commission but for also use by other regulators,
22 whether they be in areas like energy or financial

regulations so that we could all come to some, at least data-based view, as to impact on our markets.

And, whether it's in this report today or any number of reports that the Market Intelligence Branch over the last two years have produced in areas -- in this area, but also in ag commodities and in financials. I think that the Market Intelligence Branch is doing exactly what we set out to do, and under its new Chief Intelligence Officer Mel Gunewardena, who's here with us today, will continue to provide hopefully such data driven objective work.

But finally, I'll end on a note that such work consumes resources and as an agency that's been chronically underfunded, we’d like to continue to provide such quality data-driven objective work for use by the community so we can have intelligence of what's happening in our market. So we can then, hopefully, as Tyson says get ahead of things, but certainly look down the road to anticipate what those changes may be.

And so, I hopefully as an agency going forward, this value-add that we bring to the marketplace will be recognized by our oversight committees and others so

that we could have the resources to do such quality work going forward.

Thank you.

CHAIR WIGGINS: Thank you. Commissioner.

COMMISSIONER BERKOVITZ: Thank you. This has been an excellent discussion, very informative and I too echo the Chairman's comments about the Market Intelligence Branch and how useful it is.

Being here initially when we did the Dodd-Frank Act the first time regulating basically from a blank slate, a market where there was no data. We didn't have the data on the swaps market at that time, and the agency at that point, it was doing its best to figure out where the regulations should lie and how to balance the various objectives. And now, since those regulations had been in effect since the end of 2012, we have a lot of data.

The data needs -- we need some work on the data and we're doing that to improve that data, but we do have five, six, seven years’ worth of good data. And I think analyses like these Market Intelligence Branch and not just about the swaps market, but looking at the

1 futures market really so we can go forward and say,
2 what have we learned over the past five, six, seven,
3 ten years or whatever and where do we go forward from
4 here?
5 In that, and as Commissioner Stump mentioned,
6 we've had number of advisory meetings and it's very
7 interesting to sit through several of these to see some
8 common threads in the various markets. And Market
9 Intelligence Branch did a presentation to the
10 Technology Advisory Committee on the impact of
11 automated trading and how that may affect the various
12 futures markets.
13 And I was looking at the presentation that
14 Marketing Intelligence Branch provided to that advisory
15 committee, indicated that between 2013 and 2018, the
16 percentage of automated orders in the energy markets
17 had increased from about 65 percent of all orders in
18 2013 to about 80 percent of orders in 2018, so that the
19 data demonstrates this increase in an automated orders.
20 And also, if we're talking about the futures
21 markets 10 years ago, one would read stories 10 years
22 ago about, various traders at trading firms, the big

1 traders, Andy Hall and the oil markets, and Brian
2 Hunter in natural gas markets, and John Arnold in
3 natural gas markets. You really had individual people
4 making big bets and directional bets and a lot of press
5 on that. And now we're in a market where much of it,
6 we have these automated orders.
7 The conclusion from the study that was presented
8 to the advisory committee, the Technology Advisory
9 Committee, was that automated trading really hadn't
10 affected volatility in the futures markets that you
11 looked at. But you mentioned about price discovery,
12 the price discovery process and whether the price -- we
13 have a robust price discovery process. What other
14 takeaways might there be from your looking at automated
15 orders in that market? Has it been affecting the price
16 discovery process?
17 If we don't have individuals or fewer individuals
18 saying, well, I think oil's going this way or natural
19 gas is going that way, and a lot of it and is now
20 automated orders, which may or may not express
21 directional views, but can you possibly address that?
22 MR. GOODENOW: Sure. What I would say is that the

1 presentation that we gave the TAC a month or so ago,
2 that was a first pass -- a preliminary foray into the
3 market to help us better understand the degree to which
4 automated or management and automated trading might be
5 affecting our markets.
6 And with respect to the price discovery question,
7 that report does look at whether or not there's any
8 sort of correlation between the increase in the amount
9 of automated activity and end of day settlement
10 volatility. So comparisons of yesterday's price to
11 today's price, and so on, back through time. And we
12 didn't see anything on an end of day basis that
13 suggests that those are correlated.
14 Now moving forward, one of the things we hope to
15 do is expand upon that preliminary look where we're
16 looking at end of day activity and sort of expanding it
17 out to look at intraday price volatilities and intraday
18 liquidity. But that's, it's a future project.
19 And so, at this point, to directly answer your
20 question, I don't have an answer. It's something we
21 hope to look into moving forward. But I would say that
22 to your point, with the price discovery questions, a

lot of it is -- or what I had heard from, from speaking with market participants after I'd gotten done looking at all the data that we had access to, was that they've just noticed that there are fewer people out there in the backend. And so, there are questions about what is, you know, they had some questions about what is the actual price for, hypothetically speaking, just as an example, a December 2028 NYMEX WTI contract.

CHAIR WIGGINS: Thank you all very much for your comments and participation, Abigail.

MS. KNAUFF: Thank you. At this time the EEMAC, we'll take a break. We will return at 11:45.

Thank you.

(Recess.)

MS. KNAUFF: Thank you everyone. I would like to call the EEMAC meeting back to order and I'm going to turn the agenda back to Dena.

CHAIR WIGGINS: Thank you. Commissioner Quintenz, I think you had a comment you wanted to make.

COMMISSIONER QUINTENZ: Yes, thank you. I just wanted to reference the very interesting report that was presented by the Market Intelligence Branch at the

last TAC meeting. There was some conversation about price discovery and whether or not it had any findings around price discovery. And if I recall correctly, there was a chart in that report that referenced the number of intraday price changes over the course of the last five to eight years and shows that there had not been an increase in the number of those price changes that correlated to the increase in automated orders.

I thought that was a kind of a fascinating discovery, not something that I had anticipated finding that obviously, again, not conclusive the first point of conversation in that longer discussion, but I wanted to just make sure that the record and everyone's knowledge reflected that, so thank you.

CHAIR WIGGINS: Okay, let's start our second panel here and we will hear from representatives of three designated contract markets, which lists energy futures and options products. Bryan Durkin will present recent developments at NYMEX, an Exchange within CME Group, Benjamin Jackson will present recent developments at ICE Futures U.S., and Demetri Karousos will present recent developments at Nodal Exchange and

then we'll open it up to questions and comments from our Associate Members and then the EEMAC Members as we did with the last panel. So we will start with Brian.

MR. DURKIN: Thank you. Chair Wiggins and Commissioners, thank you so much for the opportunity to be with you today. I've had the benefit of being a part of this committee for many, many years now and I think what we're about to represent in terms of the exchanges is the very important part and role that we play in the U.S. energy markets and the CFTC in terms of its oversight.

And hopefully what we'll be able to also impart is our innovation as exchanges and capability to respond to the very reason why we exist, which is for risk management purposes, to provide the products and services and tools and risk management capabilities that respond to and adapt to the very important energy markets in particular and the fundamental shifts in those markets as things change, as they recently changed over the last several years.

When we look over these last few years, we've seen significant growth in the demand and the usage for risk

management in our energy sector. CME's largest four energy products, as you can see, have all experienced triple digit gains in terms of growth. And this is gains both in the average daily volume that are traded in these markets as well as gains in the open interest. A lot of this is largely driven by crude oil futures.

If you take a look at the second chart on this page it demonstrates the rise in crude oil and natural gas futures volumes as we compare it to the overall production growth in their respective physical markets that they correlate to.

Now, what does this tell us? It tells us a few things in the context of the construct of the market itself, the markets and the market participant pool remains very robust and vibrant and diverse. And WTI, as you will see, has increasingly becoming an international benchmark in terms of its recognition and reliance.

Today we are now producing as a country, and I think that this is something to be very proud of within the U.S., the most oil in our country's history. We are all so now producing more than Saudi Arabia and

Russia. Now this is a big deal to the U.S. and the U.S. markets and the investment in infrastructure in these markets.

We're also exporting more crude than we ever have before. As you all know, prior to 2015, we were only allowed to export into Canada. And as a result, our light sweet crude oil is very desirable for many countries' refineries, particularly in China. So our oil is increasingly landing on international shores. In addition, the U.S. LNG industry has started to take off rapidly and we are experiencing a very similar phenomenon. It's poised to grow significantly over this next year, and the same story exists where LNG is heading abroad over to Asia and throughout Europe.

And as a result, international traders have increasingly been turning to our products, collectively, as a product and as a marketplace of confidence to be able to hedge and to be able to manage effectively their risk and their risk exposures.

Over the course of the last couple of years, it's been our focus to really develop and grow our liquidity throughout these contracts, through the regional time

zones. Increasingly, all of these markets are becoming global markets in the context of benchmark and benchmark recognition. If you look back just a few years ago the level and percentage of average daily volume experience in our energy products average around six percent or there abouts, overnight. Today, in total, it's representing about 21 percent of our overall energy market business. So increasingly we're seeing increased participation in these markets around the clock that's transcending itself into the growth that we're experiencing in the volume of activity, average daily volume, as well as the increase in the open interest supporting these contracts.

When you look at these contracts being recognized as benchmarks, you see that the United States is exporting in excess of 2.5 million barrels a day and the EIA is predicting that this will become U.S. as a front-runner and a leader in terms of being a net exporter of energy by Q3 of 2020. Now this is something that as a marketplace we have to continue to prepare for and ensure that we are providing the most robust liquid in tight markets.

Liquefied natural gas is a very interesting product for sure. Nat gas is being cooled down into a liquid form and it's being loaded into ships as we well know, that are heading to other regimes, be it Asia and Europe. It's an extremely energy intensive process to move this product from a gaseous state to a liquid form, but economically the end-users are recognizing that it pays off when thinking about transporting it. Just putting it in perspective, you think about a beach ball. The amount of gas that fits into a beach ball once it's cooled down, can fit into a ping pong ball. It's an interesting phenomena.

China, for example, is moving away from coal to cleaner forms of energy and it's been importing a lot of LNG. Now it takes 21 days for a ship that leaves the Gulf Coast to arrive in China. By liquefying the natural gas for transport, they're getting a lot more in terms of the efficiency and the cost to be able to move that product. And it's demonstrating that the market, yes, the global market, has a vast thirst and the demand for effective hedging tools such as LNG as it becomes more popular and it becomes more prolific.

And as you can see from this chart, LNG exports are also very closely tied to export capacity. And I think a comment was made earlier in one of our prior presentations, the moment we can export more, we do. We have the ability and the capacity and the capabilities to double our LNG exports by the end of the year.

Now as a response to this growing market, the CME has announced a plan to launch a physically-delivered LNG contract in the very near future. In the meantime, these international traders are hedging and managing their LNG imports by going to our benchmark Henry Hub Natural Gas Futures contract. Our natural gas futures contract today is trading on average of about 480,000 contracts with an open interest of about 1.2 million contracts. However, this market faces the same infrastructure limitations as the crude oil market. There's more investment in infrastructure occurring as we speak. The export capabilities hopefully will be completed within the 2019-2020 time period.

As we take a look at the shale revolution, shale oil production specifically in the Permian Base, has

reached record levels on the back of increased international demand for U.S. light sweet crude oil and a booming U.S. export market. There's high levels of crude flowing from Midland, Texas to the Gulf in a congested pipeline infrastructure in that regime which has led to the utilization of some suboptimal transportation routes. Moving the oil from Midland to Cushing and then from Cushing to the U.S. Gulf Coast. Supply projections provided by Wood Mackenzie show production in this area growing by about 2.4 million a day by 2023.

Now we had several major pipelines that are currently under construction to service the record levels of shale volume flowing from the Permian Base. As midstream companies work vociferously to address the pipeline bottleneck in this region, producers look for alternative options for getting their supply to the Gulf Coast to export. And one of these options is for upstream firms to utilize pipelines from Midland to Cushing and then from Cushing to the Gulf Coast. As a result of taking this route flows from Cushing have risen substantially and we now face another bottleneck

1 situation in which the pipelines on this suboptimal
2 route are reaching full capacity, as well.
3 The three Permian pipeline projects set to be
4 completed during 2019 and 2020 would effectively
5 relieve this stress and this pressure on Cushing.
6 However, congestion in this area is expected to
7 continue and there are rumors of delays for these
8 pipelines and the construction completion dates may
9 spread out longer than anticipated. If you take a look
10 at the first chart that I presented here, it's showing
11 the flow of oil projections into Cushing if the
12 pipelines were to be completed on time. And the second
13 chart shows the difficulties if there are delays as is
14 being anticipated.
15 Currently there are 12 planned or recently
16 completed pipeline developments including connections
17 into Cushing and capacity to the Gulf. It remains the
18 pipeline crossroads of the world in terms of when we
19 look at Cushing, and the existing storage capacity
20 within Cushing currently is about 94 million barrels
21 with announced plans of increasing that to 30 million
22 over the coming years. Now these planned recent

developments and infrastructure are slated to add an additional 2.7 million barrels to the system capacity at Cushing specifically.

It's worth noting that the crude quality continues to evolve and Cushing’s central role as a blending hub and a supplier continues to perform an extremely vital role to the marketplace. It's a central location production that is able to be accessed via Canada, the Rockies, West Texas, New Mexico, et cetera, both from the inland and from the Gulf Coast refineries. All of this solidifies Cushing and the NYMEX crude oil as a premier crude oil benchmark.

Now, one of our roles as a marketplace is to make sure that we're responding to the shifts in demand and the fundamentals in terms of providing new product and capabilities to the marketplace to most effectively enable them to hedge their risk and their risk exposure. You may be aware that most recently in November 2018, CME group launched a WTI Houston futures crude oil contract. It shows that we are constantly aiming to provide participants with the most effective, the most efficient hedging tools and hopefully we're

quickly adapting to the fundamental changes as these fundamental shift.

We talked about the increase of crude exports from the Gulf Coast, but our benchmark crude oil product, as you well know, is physically-delivered in Oklahoma. Now the price of a barrel of oil in Oklahoma is, of course, not exactly the same as the price of oil at the Gulf ready to be exported.

So as we've worked with our commercial end-users and our market participants, we over time developed a financially-settled WTI Houston contracts that participants quickly moved towards but there was also an extensive demand for us to develop this current product to allow for the marketplace to more effectively hedge their exposures at the Gulf.

Now HCL, as we refer to it, or any North American crude grade contract for that matter, is not designed as a replacement for our benchmark crude oil contract in any way, shape, or form. Our WTI futures routinely trade well over a million contracts a day. We're continuing to build extensive liquidity throughout the trading day, as I've demonstrated earlier. The listing

of the HCL was strictly in response to market participants need for a product, for them to be able to manage their basis pricing risk, and also to be able to provide a contract with slightly different specs as more crude was heading to and out of the Gulf Coast.

Now we're proud of how the HCL contract has performed to date, but I'd like to put it in perspective in terms of its comparison to the benchmark WTI crude oil contract. We have 38 different participants today actively. And when I say participants, unique firms actively trading this contract to-date. But if you put this Houston market into perspective and you look at all of these products that are offered on all exchanges, the Houston WTI contract represents about 6,000 contracts in comparison to our WTI crude oils. So it's about one percent of the overall volume.

Now, HCL is physically-delivered in three locations owned by Enterprise, and it's actively gaining traction among our market participants. And we're, we're delighted to see the progress that's being demonstrated in that regard. And yes, it is reflective

of the price of a barrel of crude oil in the Gulf. But what is the true cost of a barrel on the actual dock? Right next to the water, ready to be loaded on a ship? That was the next iteration that we were hearing from our commercial participants.

So recently the CME developed a crude oil auction, which solves that problem. Now this is an electronic platform that firms are able to utilize essentially bidding on waterborne crude, which reflects the total cost. We've held two of these auctions, one on March 5th and one on April 4th. And again, our goal is to offer the most precise hedging and pricing tool as more and more crude is being produced and more of it's being exported.

There was reference earlier today in the prior presentation with regards to some fundamental changes in the construct of the longer dated contracts. When we look at the changes in the physical market, which can be seen in the graphs that I'm providing here, and you take a good look at what's happening in the Permian Basin and the supply situation, we can see that the makeup of the open interest in CME’s WTI contract has

shifted, positions and contracts further than three years out have decreased.

In portion, the total of the overall crude oil open interest, you're seeing more and more concentration and the first two to three years. Why is this so?

As we work very closely with the commercial end-user base, the producers that are utilizing our contracts seem to be less concerned with protecting the longer dated investment projects. And they're more insistent on protecting and preserving cash flows at the shorter end of the curve. We're seeing that the producers are increasing their crude oil positions in the December 2020 contract when compared to historical trends and that can be seen in the second chart on this page.

Most of the commercial hedging is taking place in the December contract, as was alluded to earlier. Now, this may further support the expectations of increasing oil flow stemming from the Permian Basin and heading for Cushing, as I represented earlier, due to the pipeline completion delays resulting in a need for our

1 producers to hedge the excess 2020 supply using the
2 Cushing base and NYMEX WTI Futures contracts.
3 I think more obvious is the Shale Era. The Shale
4 Era has evolved, it's there. It's going to be there.
5 What has the Shale Era produced for these markets and
6 for the U.S. markets? It's produced greater production
7 efficiency. It's created greater exploration
8 efficiency. It's created greater innovation and
9 greater nimbleness and greater responsiveness and
10 capacity. It's increased the efficiency of markets.
11 It's increased the efficiency of allowing faster time
12 to market and shorter investment horizons. The economic
13 decisions and liquidity has allowed firms to be far
14 more flexible and far more tactical in their hedging
15 and hedging needs.
16 So from our perspective, it's our job as markets
17 to make sure that we're responsive to the fundamentals
18 of those market shifts and providing the capabilities,
19 the price discovery, efficiency, the markets, the
20 products, and the innovation to respond to the very
21 reason why we exist, which is our commercial users, our
22 commercial market participants, so that they can come

and rely on markets day in and day out, around the clock to be able to manage that change and to be able to manage that risk.

And I think to sum it up in terms of what we've done as a marketplace, and when I think about the work that this Commission has done and the work of this particular committee, as we've looked at a myriad of issues, I feel like as an institution and as a marketplace, we're extremely well-poised to be able to respond to these issues and to be able to provide the dialogue, like through this forum, so that we can continue to be, hopefully, the front-runner and the leader in these markets.

Thank you.

CHAIR WIGGINS: Thank you very much Mr. Durkin. Mr. Jackson.

MR. JACKSON: Thank you Chair Wiggins. Thank you Commissioners.

Thank you for the opportunity to address all of you today. And to echo Brian's comments up front, our role as market operators around the world for markets, clearinghouses, and being data and analytics provider

for our customers is at the end of the day to provide the most efficient and effective way for our customers to manage their exposure to price risk.

And how we do that as engaging with many of the people in the room here, that represent different various firms around the U.S. and also global enterprises around the world, to help make sure that the instruments that they use to manage their exposure to price risk as accurately as possible to give them the ability to manage their exposure to those risks.

What I thought I'd do in my comments today is just start with three overall trends that we see in engaging with our customers in the market, and give you all flavor of how we're responding to those needs in terms of new product innovation, and give you some data points on how open interest in several of the products that we have continues to build and open interest being the open positions that are in a clearinghouse that are being held for some period of time, it could be all the way up to expiry, we think is a very good metric that shows what are the commercial users using and adopting and how are they responding to the product innovation

that we have in utilizing the contracts that we're providing.

The first trend is development of the middle class around the world. There's no question that when you think about demand for energy, where is it coming from? And there were several comments in the in the session this morning that reflected that it's coming from Asia, it's coming from developing markets, and it's that prosperity of the rising middle class that obviously leads to an increase in energy consumption, whether it be for cooking, heating a home, cooling, electricity needs, et cetera. But again, that that growth is concentrated in Asia and in developing markets.

The second key thing that we see is the real intense focus on environmental issues, both from the general populace around the world, as well as, government regulators putting in new regulations in place to reduce greenhouse gas emissions and the harmful effect that they can have on our atmospheres and in our oceans.

What we've seen is that customers of ours are reacting to the different regulations that are coming

in place and that we need to respond with new futures contracts to help them manage their exposure to price risk as price volatility tends to change, prices tend to change. As new regulations come into come into place that could affect the price of energy.

We're also seeing the adoption of alternative energy and demand for new types of hedging instruments such as carbon allowance futures, renewable energy futures as demand for products like that continue to increase.

The third trend I'll touch on is the changing supply dynamic that's been talked about throughout the morning session and also in Brian's commentary. With technology, not only leading to the discovery of new shale oil formations and gas formations around the U.S., but technology enabling a more efficient way to extract those fuels out of the ground with technology changing and adapting our infrastructure in the United States to enable those products to more efficiently get to transportation hubs and with really the unlocking of natural gas through innovations in the LNG space to take gas in its gas form, reduce the temperature to

minus 250 degrees Fahrenheit, turn it into a liquid, being able to put it onto a vessel and transport it around the world, has really unlocked natural gas as a global type of commodity.

And yet as these markets are moving more global, things like natural gas. I also want to point out that what we're seeing from our customer base is an increasing level of demand for futures contracts that as precisely as possible, help them manage their risk at the point of consumption. Because it's at the point of consumption, not just overall benchmarks, but the point of consumption that where if there's a supply disruption that happens or if there's a weather event that happens, whether it's in the southeast of the U.S., that can be very different impact of what happens in the northeast of the U.S. or the Midwest. So looking for more precise hedging instruments is the other trend that we're seeing.

Touching on the environmental items I hit on, with the reduction of greenhouse gases and the trend towards decarbonization and desulfurization. What we've done in responding to that and working with our

1 customers is that when you're operating futures
2 markets, there's really two ways to respond. First is
3 you take existing benchmark contracts that are being
4 utilized and you need to implement changes to those
5 specifications, of what the underlying physical
6 instrument that the persons and an entity is hedging at
7 the end of the day. The second way you respond is by
8 innovating new products.
9 And on this slide I'll go through several
10 different examples of how we in working with our
11 commercial customers have responded in those ways. One
12 big example is in our gas oil futures contracts, and
13 one of our significant benchmark contracts -- gas oil,
14 think of it as diesel. We went through a significant
15 change partnering with our commercial users to
16 implement, back in 2015, that significantly reduced the
17 sulfur specification of the ICE Gas Oil Futures
18 contract from 1000 parts per million to 10. And it was
19 working with and engaging with our customer base on a
20 seamless way to make that transfer and that transition
21 happening of what the underlying physical market is,
22 how that instrument's going to change, what the pricing

1 dynamic that's likely to change in that contract as
2 result of it. By working with our commercial user
3 base, we were able to seamlessly make that adjustment
4 and that change in the contract. It continues to be
5 one of our fastest growth futures contracts in our
6 complex.
7 And I also mentioned that we partner with our
8 commercial customers across North America and Europe on
9 carbon allowance futures and renewable energy futures.
10 This is new product innovation, new products that are
11 being launched that give our customers the ability to
12 manage risk and contracts like that.
13 In addition, we've launched a suite of IMO 0.5
14 percent sulfur instruments that are complementary to
15 our fuel oil derivatives complex as an additional
16 choice for customers that are dealing with regulation
17 that's having, that's lowering the caps on the amount
18 of sulfur that can be produced. In particular, in
19 marine transportation vessels. It gives customers a
20 choice as to whether they use technology to scrub that
21 fuel at the point of consumption or do they use a
22 futures contract that represents a lower sulfur fuel

instrument to perfect their management of risk.

On the supply side, I touched on some of this in my opening remarks, but obviously the shale revolution has really turned the gas and oil markets on its head, where the U.S. is now a major exporter of products like LNG and crude oil. And what's enabled it is the efficiency to extract these fuels, the investments in pipeline infrastructure, changes in that pipeline infrastructure to efficiently get these fuels to areas like the Gulf and like Houston, and then enabling it to be transferred and transferred over long distances, over the oceans into Asia, into northern Europe. That's really effected a major change in these markets.

And at the same time that these markets are becoming global, as I mentioned before, customers are looking for as precise a way to manage their end risk at the point of consumption as opposed to the point of production. We're seeing that more and more a trend in the energy markets. And I'll show you some statistics that point that out.

And last but not least, natural gas, of the fossil fuels is becoming more and more of the choice of

1 customers around the world as the fuel to burn because
2 it represents the cleanest, most efficient, and most
3 versatile instrument. And now with LNG technology
4 capabilities that have come into place that make it
5 easy to transport, much easier to transport, much more
6 efficient to transport to northern Europe and Asia.
7 It's really becoming a global commodity.
8 I'll touch on crude oil here briefly. So there
9 was some comments made this morning and the report the
10 Chris gave I thought was really well done this morning.
11 But for us, we have over 500 different futures
12 contracts in the oil space that customers utilize to
13 manage their risk. So those are the instruments that
14 represent getting down to a level of precision should
15 the customer so choose on where exactly they're
16 consuming the end oil product.
17 A couple of the major benchmarks that we have that
18 many of you know, Brent, which is the benchmark, that
19 prices two thirds of the world's oil supply. We are
20 the home of that contract. A contract that's been in
21 place for 30 years. Open interest continues to build
22 in that contract and it primarily represents oil that

is waterborne transporting around the world, is where that benchmark is used to hedge a price exposure.

The next one I'll touch on is our Dubai Platts contract. So this contract continues to grow and open interest continues to grow in trading volumes. This contract, it trades right alongside our Brent contract and it represents and is it a growing representative price benchmark and risk management tool that's used for hedging price exposure to oil coming out of the Middle East to primarily being a transported into Asia.

And in the U.S. we have the ICE WTI Cushing contract, which represents a really landlocked oil production coming out of the U.S., and then as we've touched on this, the graphic here in North America and this slide on slide seven, shows the Permian Basin that's been touched on and talked about in several of the conversations this morning.

There is new infrastructure that's come online with the Bridge Tex and Longhorn pipelines that officially is getting oil, increasingly getting oil efficiently to the Houston area and we've launched our WTI -- Permian WTI contract just at the end of last

year. That contract continues to build an open interest. It's a physically-delivered contract and what we've been pleased to see is that the delivery mechanism of that contract continues to get tested with over a million barrels delivered against that contract in the short life that that contract has had.

We believe that will be a price benchmark that that will continue to adopted and will continue to grow to be a representation of oil that's coming out of basins like the Permian Basin that's destined to hit the water and to travel overseas. And then once it hits the water, Brent is the benchmark that be the benchmark that would be used to hedge price exposure beyond that point.

CHAIR WIGGINS: Mr. Jackson, could I just ask you to take no longer than about five more minutes to end your presentation? Just because I want to make sure that we get to the last presentation and have enough room here in the schedule for comments and questions.

MR. JOHNSON: Sure. I’m almost done. I’ll just hit this and natural gas real quick.

So this slide shows open interest from 2011 to

2019. In the purple-ish color is as the ICE Brent Futures open interest in the blue is the ICE WTI OI Futures open interest growth. And then in the green, you can see the substantial growth of the Dubai related contracts. And then in the upper right hand corner you can see the, the relatively new Permian WTI contract. How open interest is building that. It's gone through a couple of deliveries and we're pleased to see that that delivery mechanism is continued to be used.

For natural gas, the points I would touch on quickly. So we've developed 58 different basis markets around the U.S. in addition to Henry Hub. And it's the 58 basis markets that we've had that we've seen significant open interest building, which tells us that customers are increasingly wanting to really manage their price exposure risks at the actual location where they're consuming it. And I'll show some of the open interest trends that a minute.

The other thing that's represented on this slide is the LNG flows. We've talked about the technology that's enabled LNG flows to happen. Well on the receiving end of the terminals so that the U.S. side

you have terminals that are cooling the natural gas to get into a solid state. The areas where there are significant investment in terminals coming online are in Japan and Korea, and we have a JKM LNG contract that continues to grow in open interest very significantly. And I'll show the open interest trends on the next slide for that, based on those terminals coming online and as LNG is leaving the U.S. and it's heading to ports in Asia in particular in Japan, Korea, and actually throughout Asia, we're seeing increasingly that those physical contracts are being benchmarked to that JKM price.

And then in in Europe we have the NBP and the TTF contract. NBP is UK natural gas. TTF is natural gas in the Netherlands. While there's multiples natural gas supplies that go against those contracts. What we're seeing increasingly is that in particular in TTF, LNG supplies that are leaving the U.S. and destined for northern Europe, that is a significant and growing amount of the LNG that's leaving the U.S. is going to northern Europe is being priced by the TTF contract.

And this next slide shows the build in open

interest. You can see where with U.S. Henry Hub in the blue on the top, but where the significant growth for us that we've seen across our contracts has been in the U.S. basis markets represented in the brown and then UK gas. And you can see the EU gas, which is a TTF on the bottom. And on the right hand side, we've seen 230 percent growth in the JKM LNG contract alone since 2016.

The last piece I'll touch on briefly, we continue to innovate with our customers in providing power markets to our customers. We're a leading provider of power markets around the world. We provide over 300 futures contracts in the U.S. alone, in 25 options contracts that help customers manage their risk as precisely as possible, while also having a keen eye towards having transparent risk metrics around how people are managing the risks, how clearing and how margin requirements are being set in these power markets as they can be very volatile markets. And then, in Europe we've developed 10 different futures contracts and three options contracts as well that continued to build for us.

1 So a quick summary of the trends. We're seeing
2 growth in demand across Asia. We're seeing in terms of
3 the liberalization of natural gas and the efficient way
4 to transport natural gas, that's become much more of a
5 global market. And with the U.S. now being a net
6 exporter of products like crude and natural gas, the
7 demand to have more localized points of where
8 consumption is happening on these commodities continues
9 to increase.
10 And we look forward to continuing to partner with
11 all of you to continue to innovate and provide the best
12 risk management solutions we can. Thank you.
13 CHAIR WIGGINS: Thank you very much. Mr.
14 Karousos.
15 MR. KAROUSOS: While the deck is coming up, I
16 would just like to say thank you to Commissioner
17 Berkovitz for hosting us today and Chairman Giancarlo
18 and the rest of the Commissioners.
19 You know, it's always exciting to come to the
20 CFTC, not only to see familiar faces on the Commission
21 and staff, but boy, if you've successfully navigated
22 that ramp down to the third floor in the garage, you

1 know, you can take on anything. And so, it's always
2 exhilarating the come to the CFTC.
3 So again, I'm Demetri Karousos with Nodal
4 Exchange, just a brief overview of who we are. We may
5 not be as well-known as ICE and CME, but we're hoping
6 to change that.
7 Just last week we celebrated our 10-year
8 anniversary, so it's exciting to have been along for
9 the journey the whole way. We are now an energy,
10 environmental, and logistics commodity exchange. We
11 are a DCM. We were, of course, launched to better
12 serve the hedging needs of the power market, that's our
13 origin. We do provide the ability to trade futures and
14 options on hundreds of hub zones and nodes across the
15 seven organized markets. We do offer the Henry Hub
16 contract.
17 In November, we launched a full suite of
18 environmental futures and just last month we launched
19 the world's first trucking freight futures. We have
20 multiple platforms to trade, including the T7 matching
21 engine from Deutsche Börse Group, which powers EUREX,
22 the EEX Group’s engines and the Frankfurt Stock

Exchange. And all the contracts are cleared by Nodal Clear, using the true portfolio margining that we innovated.

We are, as of May of 2017, part of the EEX Group, which is itself a subsidiary of Deutsche Börse Group, a $20 billion European exchange group, so we fit in there in the bottom right and represent the growth vehicle for the Americas.

Okay. Onto power. So the first thing to note about derivatives trading in power is that virtually all power futures contracts settled to the spot markets in one of the seven organized power markets that have gone nodal in the U.S., so what does that mean?

The big change from a deregulation standpoint was in the 90s and early 2000s, when many of the former NERC organizations became RTOs or ISOs and offered nodal points pricing in order to allow a more efficient allocation of capital in order to build out transmission and generation, it was called the standard market design. So those markets today we know is PJM, MISOs, SPP, and so on.

What's critical to note is that these spot markets

are among the most surveilled spot markets in the world. You've got both the FERC, and for Texas, the Texas PUC, you've got independent market monitors, you've got internal market monitors that each of the ISOs, as well as the various state PUCs overseeing a safe and transparent market operations. So the first thing to note about power derivatives in the U.S., it is the most surveilled spot market in the world.

Now as we look at total power volumes, this is across all the exchanges from 2013 onward. You'll see that recently we've seen a bit of a dip in a power futures volume from a high point in 2016, but I'll note that the line on that graph, the which represents open interest represents an all-time high. And we think that open interest really signals a strong hedging need for the market.

Price volatility continues to increase making hedge and even more important, what you're looking at here is volatility representing spot markets of the major hubs and dating back from 2005 through 2018, you can see the spike in 2014 but various spikes in the past few years relative to the relative calm during the

first decade of the century.

Now this side has a lot going on. Let me try to explain it to you. This talks about just how difficult it is to predict power pricing. The bottom of the graph, you'll see three separate contracts. The PJM Western Day Ahead Peak, PSEG Zone, which is the utility in New Jersey, Day Ahead Peak, as well as the Mass Hub, the Massachusetts Hub Day Ahead Peak in ISO New England. And right above that you see that we're looking at the January and February expiries for each of those contracts.

And then, the bars represent the years 2014 through 2018. So now as you look at the tall blue bars across all of those expiries. That represents the peak pricing we saw during the Polar Vortex of 2014. That was a tremendous year volatility and had large impacts in the industry. But then look at what happened in 2015, 2016, 2017, tremendous year over year volatility. So if you're a producer of electricity or consumer electricity, how could you not but want to hedge that kind of volatility.

Now look at coming into -- well, first I guess

1 noting 2017 to 2018 just in that year for PJM January
2 Western Hub, a doubling of prices in, near tripling in
3 PSEG and in Massachusetts Hub as well. So now you're
4 coming into the winter of 2018, 2018-2019, early
5 December. And pricing at each of these locations was
6 quite high following the volatility in the gas markets
7 that we saw in November. So PJM, for example, the
8 January expiry for PJM Western Hub, $64 was the price.
9 Where did it settle? $39. Again, tremendous
10 volatility that you need to -- that you'd want to be
11 able to hedge a effectively.
12 What leads to this volatility of pricing? We've
13 already talked about the intimate links between natural
14 gas and power, roughly a third of power is now
15 generated by natural gas and roughly a third of natural
16 gas is used to generate power. So, of course, they're
17 intimately linked and it's even more it's even more
18 substantial than that because natural gas on the margin
19 is setting the price for power much larger than its
20 share of generation.
21 But there's more for power, of course,
22 transmission constraints, short-term weather risks,

industrial demand, regulatory risks, power plant outages, transmission outages, and the change in the generation mix from coal and nuclear retirements to renewables.

And so, you know, part of my focus on this presentation is to address a bit of a hidden question here, which stems from the events in the last year in the power markets, which is some have asked a question, you know, is it even suitable to trade power as a derivatives contract? Is power a suitable commodity for futures markets? Our answer of course, is an emphatic yes. Why? Because the market participants have a tremendous need to hedge this product. And the ability to manage that risk can and has and has easily been done within the exchange and clearinghouse model.

So stepping back, if I asked you what's the relative volatility between power and natural gas? You know, some answers that I've heard just from surveys on people walking down the hallway, “oh, I don't know, three or four or five times higher between power and natural gas.” Well, using some traditional risk measures such as standard deviation, if we look at the

prompt month, and this is from 2013 to 2018, daily volatility for power futures was only 30 percent higher than natural gas. And in fact, for 12 months out, so longer dated expiries were virtually flat, virtually equivalent volatility between the two markets. Even in 2014, the year of the Polar Vortex, power volatility ranked only 74 percent higher than natural gas.

Now that doesn't mean that there isn't any volatility in power, nor that standard deviation is the right way to think about volatility or risk management in the power market. The key, of course, is to properly manage the tail risk and to understand where in the portfolio that risk resides. So when you do focus on the tail risk, you more accurately address the exposure that initial margin is meant to cover. You can see here now the volatility comparisons between power and natural gas as of roughly two X factor in the prompt month and significantly higher in the outer months, as well.

Properly segmenting a portfolio is key to identifying where the risk pockets really are. And finally, taking measures to avoid complacency during

low volatility periods. So these are traditionally known as anti-“pro-cyclicality” which is a mouthful. But what it really means is making sure that your risk model captures historic periods of volatility, so that recent calm doesn't lull you into a false sense of comfort. And also addressing liquidity concerns for that open interest further enhances market protections.

And with that, I yield the presentation.

CHAIR WIGGINS: Thank you very much. Do we have any comments or questions from the Associate Members?

Tyson you are an EEMAC Member. Do you want wait until we get to the Members?

MR. SLOCUM: Yes, I will wait.

CHAIR WIGGINS: Okay. I can’t see your name tent from here. Would you like to comment? Go ahead.

MR. MORK: Thank you. Robert Mork with NASUCA.

We're kind of newcomers to the group here, so we're glad to be here. But it seems to us that there's kind of been an evolution in how we see things as consumer advocates and maybe RTOs, regional transmission organizations, which run so many of our power markets had been kind of a gateway drug for us in

getting us as consumer advocates interest in these interested in these areas. We do have a strong consensus, I think, as a group that markets can bring it efficiency and long-term value to customers.

I just wanted to say today, as kind of a new member, that this has really been an interesting discussion. We're very interested in some of these hedging issues and so I think I'll leave it there for right now, but thank you.

CHAIR WIGGINS: Sue.

MS. KELLY: Thank you. I hadn't really anticipated saying anything, but I was struck by the slide by our last presenter slide number eight, that talks about the forward pricing risks that market participants have. And as you can tell, we're coping with a lot when we actually are trying to serve customers with reliable and affordable power supply, and also do that consistent with a good environmental stewardship. It's not easy to, you know, handle all those things.

I just point this out because when we have discussions this afternoon about our ability to have

liquid trading instruments and not have to be subject to such substantial restraints on our ability to do that, as we might see in the rulemaking that the prudential regulators are doing. I mean, this is what we're dealing with on a day-to-day basis and what we need is kind of understanding from federal regulators in the financial marketplace. Not so much you, we love you. But you know, it's just certain other venues where we could have real issues and make it more difficult for us to be able to deal with this slide. Thank you.

CHAIR WIGGINS: Paul.

MR. CICIO: For Mr. Karousos. Yes, sorry, I did so poorly on that name. But, my manufacturing companies, when we talk about electricity futures and hedging, the first thing out of their mouth is always a problem with liquidity. And could you explain what is the problem? Why are we having a problem with liquidity and electricity hedging?

MR. KAROUSOS: That's a good question because I'm not aware of that problem.

So you know, most markets -- most financial

1 derivatives markets operate on the effect of the kind
2 of a hub and spoke approach, which is to say that
3 typically hubs will provide a tremendous amount of
4 liquidity and market participants are for some of the
5 less traded contracts are more willing to trade those
6 contracts as a spread to that major source of liquidity
7 rather than doing an outright trade at those local
8 locations.
9 And so, we see a tremendous amount of that spread
10 trading at Nodal Exchange and wouldn't subscribe to a
11 notion that there's somehow illiquidity there. But it
12 does take place, typically as spreads, on the back of
13 major hub trading that that comes before it. And that
14 happens, whether you're talking about locational
15 spreads or actually time spreads. So typically
16 actually longer dated expiries are often done as
17 spreads to near-term expiries for the same reason. So
18 it's both the temporal as well as locational spread
19 phenomenon.
20 CHAIR WIGGINS: Do any other Associate Members have
21 a comment or a question and we have one Associate
22 Member on the phone. Do you have anything you'd like

to say?

MR. McKONE: No, I do not. Thank you.

CHAIR WIGGINS: Thank you. Let's turn to our EEMAC Members.

Tyson, you had your card up earlier, would you like to begin?

MR. SLOCUM: Yes, I've got four questions. I don't know if I can ask all four at once or just one at a time and see if others have questions. How would you like to handle it?

CHAIR WIGGINS: We're a little bit short on time, so let's see how it goes.

MR. SLOCUM: All right. I'll ask two and then yield and then ask the other two --

CHAIR WIGGINS: That’s sounds fair.

MR. SLOCUM: So first of all, thank you very much for the presentation. So Mr. Jackson in your presentation, you noted that natural gas now is sort of the main balancer for the intermittency of renewables and that's true today, but going forward it's going to be energy storage batteries. Do you guys have products right now on energy storage?

If not, what would those look like? Would they be sort of close to -- because most of the energy storage is seen as directly affiliated with you know, utility scale solar and wind. And I'm just wondering if this is going to be a product that we might see.

MR. JACKSON: So in terms of storage-based products, we do have some related to just energy storage but more of the physical fossil fuels, today.

I would say it is a conversation we're having with commercial customers around more things like the storage of more like battery-type of fuels and those types of things. But haven't come up with what's the magic formula when talking to both buyers and sellers on how that that would work and you create an actual liquid market for that.

MR. SLOCUM: One more question. So Demetri, you showed us some issues about volatility driving forward electricity contracts. You've got a whole bunch of variables here. But it's fair to say that some of that volatility is being driven by underlying volatility in fuel costs from natural gas, coal, uranium, what have you, as we move to greater and greater penetration

rates for utility scale, solar, and wind, do these types of renewables feature less volatility? As much volatility is what we see from, you know, say fossil fuels powered power contracts?

MR. KAROUSOS: So great question.

So the renewables have two impacts, right? So the first is that because there's zero marginal cost, they actually go directly to the left on the supply demand curve. And so, there you're basically pushing out what the mid-supply sources are. So we will typically still stay on gas at that point as gas continues to dominate the fossil fuel mix.

And the challenge though is the intermittency question, which it tends to be more of a kind of intra-day challenge more than, you know, day-to-day or month-to-month challenge. But on the intermittency that does create for folks doing the trading at the very short end of the curve, so the daily contracts, for example. You do see of course that wind, in particular, creates some volatility, as does solar, but that tends to be very, very, very short-term. That's not on par say with some of the longer term effects here of the

generation mix.

CHAIR WIGGINS: Any other questions?

MR. SLOCUM: I’ve got two, but again I don’t want to --

CHAIR WIGGINS: I've got one I'd like to ask. When you were talking about the volatility and the natural gas cost, you're looking at the spot price volatility. Correct?

MR. KAROUSOS: And the forward curve. So because the two contracts trade out in time, any major changes that you see in the gas curve get translated into changes in the power curve, as well.

CHAIR WIGGINS: Tyson, back to you.

MR. SLOCUM: So an increasingly common financing vehicle for large-scale renewable projects are long-term power purchase agreements, bilateral between the project developer and the user. There's a number of different large corporations; Microsoft, Apple, Google, that are employing these.

I would imagine that the proliferation of large-scale renewable projects under long-term PPAs negates or significantly reduces the need to hedge risks since

the PPA appears to have built-in, you know, hedging opportunities. Is that accurate? Is the rise of PPAs impacting hedging in forward power markets at all? Or is it still a negligible number in the scheme of the size of the market?

MR. KAROUSOS: So someone's always bearing the risk right when you're talking about those bilateral arrangements. And so, that risk gets hedged in the futures market. So I think what you're describing is maybe the developer feels like they may have hedged their risks.

We're actually hearing that those -- so two things. One, someone's always bearing the risk and so that ends up translating to futures activity. And two, there is -- because of the availability of futures contracts to hedge a much of this risk. And you know, when we launched, boy, there were maybe just a dozen locations that were being offered, right? And so, now there are hundreds locations being offered by us and our colleagues here.

The ability to just go directly to hedging is also something that market participants are looking at

1 directly. So rather than having a bank counterparty
2 provide you that hedge and then have the bank find a
3 way to hedge and manage that risk on the exchange.
4 We're seeing some of those market participants come
5 directly to the derivatives hedging directly.
6 CHAIR WIGGINS: Mr. Sandor, I think you had a
7 question.
8 MR. SANDOR: Just one comment. First of all, to
9 thank Commissioner Berkovitz for convening this. I
10 think it's terrific in reviving it, and to the Chairman
11 for his support and to Dena and Abigail for their
12 support.
13 I have one comment, or observation, and I guess
14 it's my job to point out what I have a major interest
15 in and that's the environment and I'm a teacher. And
16 so, when I teach every year and I update my
17 environmental data. And last week I updated on
18 environmental markets in the United States and I
19 thought I'm just coming to this meeting, what were they
20 four years ago? Where are they now?
21 If you add up the environmental open interest in
22 North American environmental markets and put it next to

gold, silver and platinum, you'll find that environmental markets OI is about equal to precious metals. And I think that's a pretty stunning statistic.

Now the volume isn’t, and then just to put this in the case, and I think at the last meeting, I'm 700 years old, my memory doesn’t go with as well as it used to, but I think it was just under 500,000.

So one reads the paper and thinks environment, it's going down. It's not much interest in it and quite the contrary if you look at environmental markets, which have grown 50 percent since we last met, or 40 percent. Thank you.

CHAIR WIGGINS: Thank you very much. Thanks to our panelists and I think that brings us to a close with this part of the session. Abigail.

MS. KNAUFF: Thank you. At this time, we will take a lunch break. We will resume the meeting again at 2:00 p.m., all EEMAC Members and Associate Members that are participating in the EEMAC lunch can proceed to the security desk to be escorted up to the boardroom on the ninth floor. If you're not attending the EEMAC

lunch, a list of area restaurants is available within your meeting folder or on the agenda table. Thank you.

(Whereupon, at 12:45 p.m., the Energy and Environmental Markets Advisory Committee recessed for a lunch break.)

A F T E R N O O N S E S S I O N

(2:06 p.m.)

MS. KNAUFF: Thank you everyone. I would like to call them EEMAC meeting back to order and turn the agenda back over to Dena. Thank you.

CHAIR WIGGINS: Thank you Abigail. During our third and final panel, we will hear from market participants about the availability of clearing and other services within the energy derivatives market place. We're going to start with remarks from Rob Creamer of FIA PTG, Bill McCoy of Morgan Stanley, Vincent Johnson of BP Integrated Supply and Trading, and Lopa Parikh of the Edison Electric Institute.

And then, as we have before today, we'll hear feedback from Associate Members and then we'll turn it over to the EMAC Members.

So with that I will turn it over to Mr. Creamer.

MR. CREAMER: My name is Rob Creamer. I am the CEO of Geneva Trading, as well as the chairman of FIA’s Principal Traders Group.

I'd like to thank the Commission and the members of this committee for providing me the opportunity to

1 discuss how the capital impact of Basel III,
2 specifically the supplemental leverage ratio, has
3 affected the principal trading community and its
4 ability to provide liquidity in the futures and options
5 markets.
6 There has been a significant impact on liquidity
7 providers as a result of the current exposure
8 methodology, CEM, in the supplemental leverage ratio
9 calculations. It has decreased liquidity in markets
10 and increased the potential for a market to experience
11 periods of extreme volatility. It has made the
12 management of clearing relationships and capital more
13 complex and contributed to the shuttering of
14 participants like Geneva Energy Markets, once a leading
15 provider in global oil markets. Implementing capital
16 rules under a framework, such as CEM, it focuses on the
17 gross notional value positions rather than their risks
18 to the marketplace, reduces market liquidity, and has
19 the potential to catastrophically destabilize markets.
20 Basel III SLR rules intended to reign in bank risk
21 taking have cascaded down to the futures commission
22 merchant divisions of clearing banks and ultimately to

1 the liquidity providers upon whom hedgers ultimately
2 rely on to transfer risk. The significant downstream
3 impact on liquidity providers of requiring banks to use
4 CEM to compute there SLR requirements is either not
5 well understood or being ignored.
6 While the Basel III SLR requirement was designed
7 to reduce risk in the system, there are areas where
8 risk has increased as a result of its implementation.
9 Liquidity providers often generate large portfolios of
10 positions with relatively little unhedged market
11 exposure. Using the gross notional value of a
12 portfolio to compute the SLR requirement of this type
13 of balance position unnecessarily limits the ability of
14 a principal trading firm to provide liquidity while
15 doing little to protect the marketplace from risk. And
16 even worse, this constraint intensifies during times of
17 stress when liquidity is needed the most.
18 The industry seems to be moving, albeit slowly,
19 towards the implementation of the standardized approach
20 for counterparty credit risk, SA-CCR, with initial
21 margin offsets for computing the SLR requirement. I'd
22 like to point out that the IM offset is a critical

1 component. A methodology that omits a margin offset
2 requires a bank FCM to shoulder the burden of a
3 client's gross notional exposure without the benefit of
4 the capital that it provides to the cover the risk of
5 its positions. In fact, there's an additional penalty
6 of holding that capital. Failing to provide IM offsets
7 is an egregiously punitive policy that should be
8 corrected for the sake of liquidity and soundness of
9 the FCM community whose stability is vital to well-
10 functioning markets.
11 And while SA-CCR will provide significant relief
12 for rates, credit, and options, unfortunately
13 commodities will actually be worse off under SA-CCR
14 without modifications than they are under CEM. This is
15 a result of the product specific multipliers. These
16 supervisory factors that are applied in the SA-CCR
17 model. Movement to SA-CCR is an important step and I
18 whole-heartedly support this transition, but
19 unfortunately, SA-CCR without modification doesn't
20 necessarily do any favors for market participants in
21 the energy sector. Until this multiplier issue is
22 addressed through modifications, we can only hope that

1 the capital that is freed up in other asset classes by
2 the application of SA-CCR, will provide FCMs with the
3 capacity to subsidize their commodity clearing
4 business. Regardless, energy businesses will look less
5 attractive to the FCM and I fear that many may adjust
6 their pricing or exit the clearing of this asset all
7 together.
8 The current CEM framework has forced liquidity
9 providers to modify their behavior to the detriment of
10 those who rely on their liquidity for hedging purposes.
11 Currently, liquidity providers are quoting markets and
12 managing inventory around gross notional thresholds
13 prescribed by the FCM through a balance sheet
14 allocation process. As a result, liquidity providers
15 avoid holding inventory that will increase their
16 balance sheet exposure even though the portfolios that
17 they manage have little to no risk.
18 For instance, if liquidity provider quotes and
19 trades an oil swap future contract, the liquidity
20 proprietor will often hedge its risk and liquid futures
21 contracts on exchanges such as CME and ICE. Both the
22 oil swap futures contract and the futures use to hedge

it’s risk are cleared and netted to reflect the actual risk of its portfolio. In this case, negligible.

Once a liquidity provider’s book is hedged and the risk is offset, it can continue providing liquidity to the market. Under the CEM framework, a liquidity provider impacts the balance sheet of its FCM in a manner that suggests a hedge position should require more balance sheet than an unhedged position.

To illustrate this point in a very simplistic example, if a liquidity provider executes a trade with an end-user that creates a $1 million long position in an oil swap futures contract in hedges it with a $1 million short position in an equivalent electronically traded futures contract, the risk will be close to zero. The CEM methodology dictates that the trade effectively uses $1 million of FCM balance sheet for the long position, plus $1 million of FCM balance sheet for the risk reducing hedge position. This is a very generalized example to illustrate the point, but as a result, the liquidity provider would be using $2 million of its balance sheet when it's market risk is almost zero. If an FCM provided a liquidity provider

1 with $100 million of total balance sheet, it could only
2 do about 50 similar trades before it would have to stop
3 quoting.
4 If a market is supported by 10 similar liquidity
5 providers and each one is provided with the same
6 balance sheet limit then the collective group could
7 only execute 500 trades before the entire group of
8 liquidity providers and the FCM supporting them is at
9 capacity. When a liquidity provider reaches the
10 capital limit imposed by its FCM, it we'll have to stop
11 trading and go into risk reduction mode.
12 Under normal market conditions, liquidity
13 providers who are nearing their capital limits will
14 reduce and widen quotes to avoid additional inventory,
15 particularly in illiquid tenors, thus making hedges
16 more expensive for it to end-users. If all liquidity
17 providers reach their capital limit at a time when the
18 markets are under stress, there will be little to no
19 liquidity available to absorb a shock. Simultaneously
20 during times of market stress, the FCM balance sheet
21 may not be under pressure and as a result, the
22 allocation of capital liquidity providers may be

reduced.

Instructing liquidity providers to unwind positions in a market without adequate liquidity further intensifies markets' volatility. Under a capital requirements framework based on market risk, rather than gross notional, principal trading firms would have plenty of capacity to support the markets and provide stabilizing liquidity.

For purposes of illustration, I'd like to share how the Basel III SLR capital rules contributed to the shuttering of a company that I cofounded, Geneva Energy Markets. GEM, as we called it was established in 2008 as a joint venture between Geneva Trading and Import Energy. Together we saw an opportunity create an entity that would integrate our combined strengths. Our vision was to create a lean and nimble liquidity provider in the energy markets that can tighten spreads and build a more robust market through an all cleared automated approach. Our, aim was to provide reliable, fair markets to the industry.

Our first year was a great success and our thesis was validated. GEM provided liquidity directly to over

a hundred counterparties, mostly commercial end-users who were looking for liquidity and commodity swap futures in tenors that lacked sufficient liquidity on the electronic trading venues.

GEM was skilled at efficiently pricing these markets and optimally hedging the swap futures exposure in liquid, screen-based futures markets. Doing so allowed us to provide exceptionally tight and deep markets for our counterparties within a manageable risk profile. Because of our competitive quoting, market participants were actively hedging and more economically able to manage their risk.

When the financial crisis occurred, we believe that GEM provided a perfect example of how one could use technology in central clearing to integrate OTC and exchange traded markets. I was extremely bullish about the opportunities in other asset classes. This model had the potential to transform interest rate swap trading as an example among many other OTC bilateral markets.

My view was ultimately proven to be very naive. I never considered that GEM would be so severely impacted

1 by regulations that were intended to foster clearing
2 transparency and competition. In terms of the capital
3 rules, I failed to appreciate that the fact that our
4 bank FCM partner's ability to support the principal
5 trading community would be so severely strained.
6 GEM thrived from 2008 through the end of 2017. In
7 early 2018, our FCM began notifying clients that they
8 would be reporting their CEM exposure under the Basel
9 III regime. In connection with this, GEM was notified
10 that it needed to reduce its risk-weighted assets by
11 several hundred million dollars. In order to reduce
12 the gross notional exposure of our portfolio, we
13 altered our quoting to reduce our balance sheet usage
14 and focused on liquidating our inventory. Our book,
15 which combined phone brokered swap futures,
16 electronically traded futures, and some options with a
17 surprisingly large consumer balance sheet under the CEM
18 methodology.
19 GEM typically maintained a VaR threshold of $2
20 million. Under the CEM methodology our balance sheet
21 usage equated to nearly $2 billion. Because of the
22 flow of commercial end-users is generally one way,

1 liquidity providers are for the most part accumulating
2 swap futures until settlement, so liquidating an entire
3 portfolio really was not possible.
4 Therefore, we surveyed the FCM community for
5 possible alternatives and approached firms who might be
6 willing and able to purchase portions of our portfolio.
7 The non-bank FCMs, who are not penalized by the Basel
8 III SLR capital rules, were largely eager to consider
9 GEM's business, but they lacked the ability to provide
10 risk-based margin financing, which is critical to
11 maintain portfolios held across multiple
12 clearinghouses.
13 We found that the bank FCMs that we approached
14 were either unable to handle certain aspects of the
15 business and/or they had their own balance sheet issues
16 to deal with. Porting positions in the CEM environment
17 was not available and many of our competitors who had
18 similar books, although I believe ours was the largest,
19 were also in active search of balance sheet. Over the
20 next several months, GEM was given a cascading level of
21 smaller and smaller back balance sheet targets to hit.
22 We did our best to manage the risk in our portfolio

while actively trying to reduce positions without spooking the market.

In April of 2018 we were given a final capital usage chart target threshold to hit. There was no viable way to reach this final target in an orderly manner, unless we could find a counterparty who would be willing to take portions of the portfolio for a fee. We ended up spending a significant amount of capital to liquidate and transfer our book and wind-down the operation.

Since this time, I've heard from exchanges, FCMs, and market participants that there's insufficient liquidity in the energy swap futures markets, which are critical for end-users to effectively hedge their exposure. I've spoken to many options firms that are far larger than GEM is in the energy markets and found that many are also dealing with the same sort of impact. They are currently holding large inventories of positions and are severely penalized under this CEM methodology.

So until SA-CCR with IM offset and other modifications is implemented, FCMs will be under

capital usage pressure and liquidity across many products will be unreliable. After SA-CCR's implemented, the industry as a whole will be more resilient, but I fear we should expect commodity markets to be less attractive and less supported by the FCM community until such time as the multiplier issue is addressed.

Thank you for providing me the opportunity to share my perspectives with this committee.

CHAIR WIGGINS: Thank you. Mr. McCoy.

MR. McCOY: Thank you Mr. Chairman, and Commissioner Berkovitz and fellow Commissioners for this opportunity to speak from the perspective of a bank-affiliated swap dealer. I am Bill McCoy with Morgan Stanley and I would like to focus on the availability of swap services for nonfinancial commodities in the energy and environmental markets, as well as issues related to margin and capital requirements in connection with uncleared energy derivatives.

Swap dealers offer counterparties a variety of over-the-counter derivative products that reference

prices of energy products. The most common type of commodity swap is where one party pays a fixed price and the other pays a floating price with payments paid on a net basis. Swap dealers also offer OTC call and put options, as well as basis swaps, collars, option spreads, and swaptions.

Counterparties use these derivative products to hedge exposure to various energy products such as electricity, gasoline, diesel fuel, jet fuel, natural gas, and propane, or an index comprised of multiple commodities. For example, energy consumers, such as airlines, enter into commodity swaps to lock in fuel prices over a certain time horizon to better manage costs. Conversely, an oil producer may enter into a swap to hedge against falling prices. Companies, such as refineries and power plants, can have exposure to different commodities or locations, and they use basis swaps to hedge their exposure and lock in profit margins.

Basis swaps may also assist producers and end-users to hedge their exposure to basis risk, which may reflect differences in location, product or quality, or

time periods. As an example of a basis swap, the seller might receive from the buyer a value based on the NYMEX Henry Hub contract price plus a negotiated fixed amount and pay the buyer the Inside FERC index value for natural gas sold at a specified location.

Often a counterparty wishes to hedge the risk of a price moving in one direction while preserving the benefit of prices moving the other direction. For example, energy consumers buy call options to hedge against higher prices and energy produces buy put options to hedge against prices moving lower. Because the outright cost of buying the call or put maybe too expensive, a swap dealer may offer an option collar in which the counterparty sells an option in order to finance in whole or in part the cost of the option it is seeking to purchase. A consumer seeking to buy a call option may simultaneously sell a put option struck at a lower price than the call it is seeking to purchase. The resulting action collar provides it both a ceiling and a floor. Conversely, energy producers may enter into a collar by buying a put option and selling a call option.

Swap dealers also offer transactions involving combinations of OTC swap products. For example, an airline exposed to Gulf Coast jet fuel prices might purchase from a swap dealer NYMEX heating oil call options as well as the swap based on the spread between the ICE Futures U.S. Gulf Coast jet fuel contract and the NYMEX heating oil contract. If the NYMEX heating oil price exceeds the strike price, the airline receives a payment from the swap dealer. By purchasing the jet fuel versus heating oil basis swap, the airline is hedged against the basis risk between NYMEX heating oil prices and Gulf Coast jet fuel prices.

Swap dealers play a critical role in enabling the financing of construction and operation of infrastructure, such as power plants and clean energy projects. In order to secure a loan, the owner of a prospective natural gas fired power plant must demonstrate to its lenders a stable revenue stream based on the spread between its anticipated cost of natural gas and its anticipated power sales. To create a stable revenue stream, the swap dealer and owner enter into a swap whereby the owner pays of floating

price and the swap dealer pays a fixed price on the spread between natural gas and power prices. This swap locks in the spread, thus generating the power plant’s margin and thereby providing stable cash flow needed to support the owner's debt obligation.

Similarly, developers of clean energy sources, such as wind farm projects, rely on swap dealer services to assure investors and lenders that revenues will support repayment of loans to the project. Given that the energy price hedge often concerns long-dated power deliverable in a remote region, the market may be very illiquid. By entering into derivatives with a swap dealer to protect against falling power prices, the wind farm project is able to demonstrate its ability to service its debt load.

Now when swap dealers enter into these transactions with owners of power plants or clean energy projects, the swap dealer assumes some of the basis risk. For example, in the case of a swap with a power plant, the swap dealer may assume three types of basis risk: first, the product basis risk, based on the spread between the fixed price sale of natural gas and

fixed price purchase of power; second, the locational basis risk, based on the spread between natural gas prices delivered at a liquid delivery points, such as Henry Hub, and the actual delivery point of the power plant's location. Third, the swap dealer may assume temporal basis risk.

Because these transactions are long-dated, the swap dealer may initially hedge its risk using futures and swaps in the more liquid front part of the curve, and then, over time, realign its overall position by trading out of the more liquid positions and establishing new positions reflecting the less liquid months and locations more closely aligned with the monthly settlement obligations as the swap with the power plant. The swap dealer will only assume such basis risk if it has the expertise and ability to execute this hedging strategy within its market risk limits. The power plant owner retains the basis risk that the swap dealer is unable or unwilling to assume. But nonetheless, the ability of the swap dealer to assume some of the basis risk is critical to the power plant owner's ability to secure financing to construct

1 and operate the power plant.

2 Now in addition to managing the market risk

3 assumed under these transactions, the swap dealer must

4 also manage the credit risk associated with a potential

5 default of its counterparty. Many of these entities

6 qualify as non-financial end-users exempt from the

7 mandatory margin requirements under the Commodity

8 Exchange Act and the Commission's regulations.

9 However, the swap dealer may nonetheless seek non-

10 regulatory margin or some other form of credit risk

11 mitigation. A new power plant, a wind farm project, or

12 an oil exploration and production company may not have

13 access to cash to post this margin. In such cases, the

14 swap dealer may enter into a lien secured OTC

15 derivative transaction with the counterparty. Under

16 these transactions, the counterparty grants a first

17 priority lien on underlying assets sufficient to meet

18 any anticipated credit exposure in the event of its

19 default.

20 By obtaining a lien on the physical assets, the

21 swap dealer requires a substantial collateralization

22 benefit. Often such liens provide the swap dealer with

right-way risk, meaning that the value of the assets covered by the lien increases when the counterparty is out-of-the-money on the derivative contract and the swap dealer has greater potential counterparty exposure. For example, an oil and gas exploration and production company may enter into a swap to hedge against declines in oil prices and secure the swap with a lien on underlying oil reserves. This lien would provide the swap dealer with right-way risk, meaning that as the value of the oil reserves securing the swap increases and causes the company to be out-of-the-money on the derivative, the default risk decreases because the counterparty's creditworthiness strengthens with the increase in oil prices. If the counterparty defaults, the market value of the assets underlying the lien has increased, thereby improving the likelihood of recovery.

Conversely, if the oil price drops below the level of the forward swap and causes a degradation in the value of the underlying oil reserves and the credit worthiness of the counterparty, the swap dealer has no credit exposure to the counterparty on the swap because

1 the swap dealer owes the counterparty on the swap.
2 These transactions illustrate the critical role
3 swap dealers play with respect to facilitating both the
4 management of risk in the energy markets and the
5 financing of power plants, renewable energy projects,
6 and oil and gas exploration and production.
7 Unfortunately, the ability of swap dealers to
8 provide these services faces significant challenges
9 posed by recent rulemaking proposed by the Board of
10 Governors of the Federal Reserve System, the Federal
11 Deposit Insurance Corporation, and the Office of the
12 Comptroller of the Currency. Specifically, the banking
13 agencies have proposed a standardized approach for
14 counterparty credit risk in derivative contracts or as
15 we've been hearing today, SA-CCR, and related changes
16 to the regulatory capital framework. There is
17 considerable complexity in the SA-CCR proposal, but
18 there are two key policy issues that emerge.
19 First, as proposed, SA-CCR may result in
20 significant disruptions to hedging by commercial end-
21 users. This negative impact arises because of
22 underlying assumptions in SA-CCR around what types of

1 counterparty relationships should be deemed more risky
2 and, as such, result in greater capital requirements.
3 SA-CCR penalizes unmargined derivative transactions.
4 Even though Congress, the banking agencies, and the
5 Commission have exempted commercial end-users
6 transactions from regulatory margin requirements.
7 Similarly, SA-CCR penalizes directionality in
8 derivatives portfolios, even though commercial end-
9 users often have directional derivatives portfolios to
10 offset and hedge their directional commercial
11 positions. SA-CCR limits collateral recognition to
12 initial and variation margin, so letters of credit and
13 right-way risk liens on physical assets are disregarded
14 entirely. Finally, SA-CCR includes a 40 percent gross
15 up add on to guard against outlier risks, the so-called
16 alpha factor, which is especially punitive for
17 commercial end-user calculations that are already
18 elevated even without the add-on.
19 Morgan Stanley, several peer firms, dozens of end-
20 users, and various trade associations have filed public
21 comment letters with the banking agencies in response
22 to the SA-CCR proposal, which, while emphasizing

1 different technical points, contain a consistent theme
2 that SA-CCR should be adapted for commercial end-user
3 transactions. Application of a penalty would work at
4 cross-purposes with the existing margin exemption for
5 commercial end-users. SA-CCR should include mechanisms
6 for recognizing the risk reducing benefits of letters
7 of credit and liens, which meaningfully reduce
8 counterparty credit risk. The 40 percent gross-up
9 should not apply to any commercial end-user
10 transactions, and instead, a downward adjustment should
11 apply when the commercial end-user is rated investment
12 grade. We believe that all of these suggested
13 technical changes are consistent with the overarching
14 policy objective in SA-CCR of increasing risk-
15 sensitivity in derivatives contracts.
16 The second key policy issue involves the
17 supervisory factors applied to commodity transactions,
18 in particular energy transactions. Like many
19 standardized methodologies, SA-CCR includes certain
20 generic assumptions that apply to every contract of a
21 particular type. In the case SA-CCR, there are
22 standardized supervisory factors that adjust capital

1 requirements based on the perceived volatility of
2 different asset classes. For example, the SA-CCR
3 supervisory factors for interest rate and foreign
4 exchange derivatives are 0.5 percent and 4.0 percent,
5 respectively. These percentages are multiplied by
6 adjusted notional values and other formula elements to
7 produce a capital requirement. In the case of energy
8 derivatives, the supervisory factor is 40 percent—not
9 only the highest supervisory factor in SA-CCR, but one
10 that is multiples of other widely used fixed income
11 products. It is worth noting here that the elevated
12 energy supervisory factor applies to energy derivatives
13 transactions with commercial end-users, meaning that
14 market participants in that segment face a double
15 penalty under SA-CCR.
16 Once again, Morgan Stanley and other commenters
17 raise concerns with this SA-CCR feature. In this case,
18 we believe that the supervisory factor is simply mis-
19 calibrated through reliance on the wrong dataset.
20 While there is notable volatility in the energy spot
21 markets, energy derivatives demonstrate considerably
22 less volatility in forward markets as we saw in our

1 presentation this morning. Based on our calculations,
2 forward market data would suggest a supervisory factor
3 of approximately 10 percent, with a lower supervisory
4 factor applying to commodity index positions, where
5 diversification reduces volatility.
6 Now the comment period for the banking agencies
7 proposed rule ended on March 18th. As Commissioners, a
8 majority of you have submitted your own public comment
9 letter to the banking agencies regarding the proposed
10 rules, specifically with respect to SLR. In light of
11 the Commission's extensive expertise and jurisdictional
12 oversight of these derivative markets, Morgan Stanley
13 encourages the Commission and the banking agencies to
14 engage in further active dialogue in the coming months
15 as the banking agencies consider the comments of the
16 trade associations and commercial end-users. As the
17 banking agencies move to finalize the proposed SA-CCR
18 rule and as the Commission considers moving forward
19 with its own capital rule for swap dealers, it is
20 vitally important that each agencies rulemaking be
21 informed by that and the other agencies and the
22 possible impact such rulemaking may have on the

1 availability of services for both cleared and uncleared
2 energy derivatives.
3 Thank you again for permitting me to talk about
4 these important issues.
5 CHAIR WIGGINS: Thank you. Mr. Johnson.
6 MR. JOHNSON: Thank you. I think more information
7 about swap delivers for the non-banking side coming up
8 here.
9 So first thing I'll say good afternoon Chairman
10 Giancarlo, Commissioners Behnam, Quintenz, and
11 Berkovitz. I would also like to especially thank
12 Commissioner Berkovitz and Chair Wiggins for inviting
13 BP to participate in today's panel.
14 First let me state that BP is committed to
15 constructive dialogue with the Commission to mitigate
16 systemic risk in a manner that protects market
17 liquidity. It is in this spirit that I am here today
18 to discuss our Integrated Supply and Trading Business,
19 as well as to discuss potential market impacts of
20 certain proposed rules.
21 So I'll start off with our organization. So BP's
22 Integrated Supply and Trading Business has two branches

in the U.S.; BP Products North America in which BP transacts crude oil, petroleum products and environmental credits as an end-user. BP Energy Company, which we call the BPEC, which is a marketer of natural gas, electric power, and natural gas liquids, as well as a swap dealer provisionally registered with the CFTC.

BPEC has a unique combination of physical and financial expertise. We are the largest natural gas marketer in North America with over 20 billion cubic feet per day of physical gas buys and sells; moving gas to and from customers across 235 pipelines, storage, and local distribution company systems each day. We are a top 10 power marketer active in our regional transmission organizations and independent system operators across the U.S., and we market and trade over 500,000 barrels per day of natural gas liquids on trucks, rail cars, and pipelines across Canada and the U.S.

Today I am representing the point of view of BPEC in this capacity as a swap dealer. For ease of reference, I will refer to BPEC as a commercial swap

dealer when distinguishing it from a more typical bank swap dealer. In this role as a commercial swap dealer, BPEC's structured products business offers affiliated businesses and third-party customers throughout the U.S., Canada, [and] Mexico, innovative and competitive risk management solutions across the energy spectrum.

Our customers include municipalities, state and federal governments, power producers and consumers, oil and gas producers, airlines, mining, agriculture, transportation, petrochemicals and national oil companies, transport, shipping, steel, pulp and paper companies, as well as banks, hedge funds, and private equity firms. As one would expect BPEC offers financial products to producers and consumers to mitigate their price risk, giving them confidence to develop natural resources and manufactured goods. In addition, a large part of BPEC's swap dealer business involves developing structured financing and bilateral hedging solutions for companies in need of innovative deal structures.

For example, BPEC helps manage risks associated with complex transactions that need more tailored

solutions in order to enable new technologies to become a reality. BPEC has developed complex structure products and support of new business ventures like solar, wind, carbon sequestration, and industrial manufacturing that allows such projects to obtain financing and be developed. It is in this part of the business that BPEC must tap into less liquid commodity markets and, many times, must warehouse some risks in its own portfolio due to the lack of liquidity.

BPEC believes that commercial swap dealers should not bear unreasonable burdens or be forced to tie up investment capital under unnecessary capital and margin requirements. Regulations should not impede BPEC's ability to provide hedging services for commercial end-users or to provide structured products in support of investment in new technologies.

Unlike the bank swap dealers that transact all forms of commodities and financial products like interest rates, credit default swaps, and FX swaps; BPEC swap dealing activity is limited to transacting commodities. It is primarily focused on energy products. Financial commodity markets differ from

other derivative markets because they are underpinned by the production, transfer, and usage of physical commodities.

Commissioner Berkovitz has recognized that commodity derivative markets exist first and foremost for end-users to hedge their physical commodity risk. Therefore, they must remain healthy and liquid.

First, getting to the proposed rules out there, BPEC would like to comment on the prudential regulators standardized approach for measuring counterparty credit risk as the SA-CCR proposal. So BPEC's customer base, as I mentioned, consists primarily a commercial end-users and BPEC is closely aligned with the comments provided by NGSA, IECA, and other end-user associations on this issue. We were pleased to see the CFTC Commissioners comment on the proposal.

SA-CCR represents a new methodology to calculate the capital required to address the risks that a counterparty will not meet its contractual obligations. The SA-CCR methodology assigns the highest supervisory factor risks weighting to energy commodities, as we just heard, and imposes higher capital requirements

1 where unmargined derivative transactions due to stress
2 and volatilities observed during the financial crisis.
3 Trading market volatility is not a good measure of
4 forward credit risks. This is particularly true when
5 the commercial end-user is experienced in managing such
6 market volatility and it is using it swaps transactions
7 with banking organizations or commercial swap dealers
8 to hedge or to mitigate its exposure to commercial
9 risks. The likely result of the proposal is that
10 banking organizations will need to maintain
11 substantially higher amounts of regulatory capital for
12 bilateral non-cleared energy commodity derivative
13 contracts with commercial end-users.
14 Swap dealers in the commodity space are also
15 called on by customers to create customize and non-
16 cleared bilateral derivative solutions in markets that
17 are often less liquid than markets for standardized
18 products. In this instance because the counterparty's
19 identity is known, the swap dealer has flexibility to
20 determine the best way to manage risks. It can conduct
21 due diligence and evaluate its exposure and its credit
22 risk based on its overall relationship with the

1 counterparty and use of noncash collateral is
2 commonplace.
3 BPEC takes issue with SA-CCR’s failure to
4 recognize the credit risk reducing value of alternate
5 forms of collateral provided by commercial end-users,
6 which has the adverse impact of artificially increasing
7 the calculation of the exposure amount. These
8 alternate forms of collateral, which are commonplace
9 and commodity derivative markets, include the provision
10 of letters of credit, liens on a counterparty's assets,
11 and guarantees provided by investment grade entities.
12 Each of these noncash forms of credit support have been
13 historically utilized in support of various types of
14 financial arrangements by banking organizations with
15 respect to derivative contracts and with respect to
16 other forms of financial arrangements; including
17 borrowing-based credit agreements, project financing,
18 and various other commercial credit agreements. To the
19 extent this rule increases the capital associated with
20 non-cleared bilateral derivative transactions, it
21 threatens the flexibility inherent in the energy market
22 to manage risks.

1 Another issue of concern to BPEC is the upcoming
2 September 1, 2020 deadline to comply with Phase 5
3 initial margin requirements under the uncleared margin
4 rules. The uncleared margin rule will require a
5 posting of cash-based initial margin for all covered
6 swaps between two swap entities or between a swap
7 entity and a financial end-user that has over 50
8 billion in gross notional exposure and uncleared swaps.
9 BPEC is already incurring substantial compliance
10 resources planning for the upcoming obligation, which
11 requires large-scale efforts to review every bilateral
12 relationship, identify which to read document,
13 negotiate and established third-party segregated
14 accounts between swap dealers and financial end-users,
15 and adopt new initial margin modeling processes. Those
16 persons who will be subject to initial margin are
17 currently subject to variation margin, and in most
18 cases the variation margin will be sufficient to cover
19 the credit risk.
20 Additionally, the uncleared margin rule does not
21 recognize the value of noncash collateral to cover the
22 credit risks envisioned by the initial margin

1 requirements. Noncash collateral is traditionally used
2 by both banking organizations and commercial entities
3 in the energy commodity markets due to the lower costs,
4 accessibility, and inadequacy of covering credit risks,
5 such as letters of credit and guarantees provided by an
6 investment grade rating entities with the
7 counterparties corporate family.
8 The CFTC’s Office of Chief Economist issued a
9 report on October 24, 2018 recognizing Phase 5 of the
10 uncleared margin rules implementation will bring into
11 scope counterparties that pose no systemic risks, yet
12 they are still being subject to the full panoply of
13 implementation and compliance burdens. This is even
14 more apparent with respect to commercial swap dealers
15 who transact commodities. As the Office of the Chief
16 Economist's report recognized, commodity swaps
17 constitute less than 0.35 percent of global swaps
18 notional amounts.
19 We believe the Commission should exempt
20 commodities or otherwise provide relief from to Phase 5
21 unclear margin rule obligations. Implementation of the
22 uncleared margin rules will unnecessarily tie up

capital and cash margin that could otherwise be put to work supporting investment in the energy value chain, which supports new technology, economic growth, and job creation.

Chairman Giancarlo recently stated during his speech at the United States Department of Agriculture's 95th Outlook Forum, “derivative serve the needs of American society to help moderate price, supply, and other commercial risks to free up capital for economic growth, job creation, and prosperity.”

BPEC would also like to take this opportunity to raise a similar concern regarding the CFTC’s December 16, 2016 proposed rule regarding capital requirements for swap dealers and major swap participants. The Commission should recognize there are very real differences in risk profile between prudentially regulated banks swap dealers and CFTC regulated commercial swap dealers. Commercial swap dealers transact solely in commodities, so capital requirements should be right-sized commensurate with the applicable risks associated with their business.

In the proposed capital rules, the CFTC recognized

that financial firms generally present a higher level of systemic risks than commercial firms as the profitability and viability of financial firms is more tightly linked to the health of the financial system than commercial firms. If commercial swap dealers are required to apply the same capital requirements structure as financial institutions, this will significantly increase costs and unnecessarily remove capital from the market that would otherwise be reinvested in physical energy projects.

Also, unlike banks swap dealers, commercial swap dealers are at a clear disadvantage with respect to meeting capital requirements because they do not have access to inexpensive sources of capital bank lending, so they effectively are forced to tie up more expensive investment capital. To the extent the regulatory burden becomes too great, it may very well lead to further concentration in the market, an issue that Commissioner Berkovitz indicated is of particular concern during his recent remarks at the Commodity Market Council State of the Industry 2019, where he stated “[t]oday the swap market is concentrated in a

few large bank dealers. These high levels of concentration present potential systemic risks. Since the failure of one of these firms in a highly interconnected market could have significant impacts on the other financial firms in the market."

In written comments to the proposed rule, BPEC requested some specific changes including ensuring that all commercial swap dealers can utilize the alternative capital approach based on tangible net worth. Otherwise BPEC would need to devote significant resources to modify its existing risk management program, including revising its internal value-at-risk and liquidity stress testing models. Also BPEC argued any final rule should explicitly recognize and approve capital requirements for commercial swap dealers that are based on internal risk measurement models using widely accepted and well-understood risk management practices in the energy industry.

This could include, as I said before, providing a noncash collateral where appropriate. Regulatory requirements that prevent commercial market participants from using noncash collateral to satisfy

1 their capital requirements and instead impose a one-
2 size-fits-all collateral requirement that requires the
3 use of either cash or certain highly-liquid debt
4 obligation erodes our flexibility, ignores the value of
5 our assets, and threatens to unnecessarily tie up
6 working capital from beneficial use.
7 So I want to thank you for allowing BPEC this
8 opportunity to describe the important functions a
9 commercial swap dealer provides in commodity markets
10 and to highlight some of the differences between bank
11 swap dealers and commercial swap dealers, which
12 justifies different regulatory treatment. BPEC feels
13 that it is imperative for the Commission to help keep
14 capital at work in the energy industry supporting the
15 creation of jobs, energy production, and manufactured
16 products for U.S. consumers.
17 CHAIR WIGGINS: Thank you very much. Ms. Parihk.
18 MS. PARIKH: Good afternoon Commissioner
19 Berkowitz, Chairman and Commissioners. Thank you for
20 the opportunity to participate today on this very
21 important issue. I'm here today on behalf of the
22 Edison Electric Institute or EEI. EEI is the

1 association that represents all U.S. investor owned
2 electric companies in the United States. Our members
3 provide electricity for about 220 million Americans and
4 operate in all 50 states and the District of Columbia.
5 As a whole, the electric power industry supports more
6 than 7 million jobs in communities across the United
7 States, and our members are committed to providing
8 affordable and reliable electricity to customers now
9 and in the future.
10 As part of that, we rely on derivative contracts
11 including financially-settled commodity swaps and
12 customized bilateral forward contracts for energy
13 commodities to hedge or mitigate the risks associated
14 with ongoing business operations. Many of these risks
15 were outlined today in the discussions this morning,
16 and include volatility in the markets, the increased
17 use of natural gas and renewables to serve end-use
18 customers, accommodating new technologies such as
19 electric storage, and continuing to meet the
20 expectations of our customers going forward.
21 All of the EEI's members are commercial end-users
22 for purposes of CFTC regulations. And as such, we have

1 appreciated the ability to work with CFTC Commissioners
2 and staff in developing the rules implementing the
3 Dodd-Frank Act. Central to that effort was ensuring
4 that the implementing regulations reflected Congress's
5 intent to provide commercial end-users with broad
6 exemptions from the new registration and clearing
7 requirements in the Commodity Exchange Act that are
8 applicable to swaps and certain participants in the
9 swap markets. This included, for example, ensuring
10 that contracts entered into with the intent to
11 physically-settle are excluded from the definition of
12 swap.
13 It included having a de minimis threshold to the
14 swap dealer definition that reflected commodity market
15 practices and conditions; and included having a
16 workable end-user clearing exception for swaps that are
17 used to hedge or mitigate commercial risk. And
18 especially relevant to my comments today, it included
19 that swap dealers and other covered swap entities could
20 negotiate the terms of their swaps with commercial end-
21 users free from any mandatory minimum margin
22 requirements.

1 EEI appreciates the CFTC's efforts to develop
2 regulations that largely address the concerns of many
3 commercial end-users on these and other issues. EEI
4 members have implemented processes to accommodate the
5 Commission's regulations and going forward the key is
6 maintaining regulatory certainty. As such, any changes
7 going forward should seek to maintain the certainty
8 that has been provided to-date and not impose
9 additional regulatory burdens on commercial end-users.
10 As has been discussed by my panelists, the
11 prudential regulators proposed a new methodology SA-CCR
12 for measuring counterparty credit risk. The proposed
13 methodology assigns a lower risk weighting to banking
14 organizations non-cleared derivative contracts that are
15 collateralized with cash margin. While this
16 methodology may be consistent with the way the
17 prudential regulators evaluate the risks of
18 standardized trading instruments where such derivative
19 contracts are cleared and cash margined and the
20 counterparty to the trading instrument is anonymous,
21 this framework does not work for the financially-
22 settled commodity swaps and customized bilateral

1 forward contracts for energy commodities that are used
2 by end-users.
3 This is because not all derivative contracts that
4 are used by end-users are trading instruments. They
5 aren't traded or standardize enough to be tradable on
6 an exchange or accepted for clearing by a central
7 clearing party, or even required to be cleared. Thus,
8 a transaction-only based credit risk methodology like
9 SA-CCR is not appropriate for assessing credit risk
10 associated with customized and non-cleared bilateral
11 derivative contracts where the counterparties' identity
12 is known and the banking organization can conduct due
13 diligence and evaluate exposure and its credit risk
14 based on its overall relationship with the
15 counterparty.
16 If implemented as proposed, EEI is concerned that
17 the new requirement will negatively impact the progress
18 that has been made to-date by requiring banking
19 organizations to maintain substantially higher amounts
20 of regulatory capital for bilateral non-cleared energy
21 commodity derivative contracts with commercial end-
22 users. This would indirectly raise costs for end-users

1 as the banking organization seek to pass on increased
2 regulatory capital costs.
3 This increased capital requirement will also
4 likely decrease the overall liquidity in the markets
5 for energy commodity derivatives, as banking
6 organizations may choose not to engage in the markets
7 for some or all of these energy commodities due to
8 higher costs. And I guess as illustrated by my
9 comments from my other panelists, all of our fears are
10 well-founded regarding the implementation of SA-CCR as
11 proposed.
12 So the primary concern to us is that the proposed
13 rule is inconsistent with the Dodd-Frank Act
14 rulemakings on capital and margin for non-cleared swaps
15 that are applicable to registered swap dealers. And
16 the legislative history of the Dodd-Frank Act, Congress
17 made it clear that it did not intend regulators to
18 restrict or burden the ability of commercial end-users
19 to enter into swaps to hedge or mitigate commercial
20 risks arising from ongoing operations. Both the CFTC
21 and the prudential regulators final margin and capital
22 rules were consistent with this congressional intent

1 and did not impose regulatory margin or capital
2 requirements for swap dealers non-cleared swaps with
3 commercial end-user counterparties.
4 By increasing the regulatory capital requirements
5 for banking organization's exposure to non-cleared
6 derivative contracts, this would include swaps, non-
7 financial commodity forwards, and other commodity
8 transactions that are excluded from the defined term
9 “swap” or excluded or exempted from the CFTC rules or
10 regulations or orders, unless they are cash margined.
11 The SA-CCR proposal effectively circumvents the
12 protections provided by the regulators in their final
13 capital and margin rules.
14 In our comments in response to the proposal, we
15 asked the prudential regulators to exclude from the
16 regulatory capital calculations non-cleared derivative
17 contracts between a banking organization and a non-
18 financial end-user counterparty. This will help ensure
19 that the SA-CCR proposal aligns with the exclusions,
20 exceptions, and other regulatory accommodations that
21 commercial end-users have been granted under the Dodd-
22 Frank Act and regulations implementing the law.

1 If the prudential regulators decline to change
2 their proposal to align with their previous orders,
3 then at a minimum as stated by our previous panelists,
4 they should allow commercial end-users to use non-
5 margin forms of collateralization. Allowing use of
6 noncash collateral recognizes the credit risk
7 mitigation of non-margin forms that have been commonly
8 used by commercial end-users, including liens on
9 physical assets or other forms of credit support as
10 guarantees or letters of credit that mitigate the
11 banking organizations credit risk exposure.
12 Not allowing the use of these additional forms of
13 collateral overstates the actual credit risk to which
14 banking organizations are exposed to in their
15 transactions with end-users and unnecessarily, and
16 inappropriately, increases the costs for these
17 transactions. Any requirement the non-financial end-
18 users posts substantial cash margin as collateral for
19 commodity derivative contracts would harm market
20 liquidity and significantly impair end-users' ability
21 to efficiently deploy capital and hedge commercial
22 risk.

1 The prudential regulator should also eliminate or
2 substantially reduce the supervisory factors applied to
3 derivative contracts referencing energy commodities
4 with commercial end-user counterparties. The most
5 significant supervisory factors are applicable to
6 derivative contracts referencing electricity, oil, and
7 natural gas commodities; the primary things that we use
8 to generate electricity. This supervisory factor is
9 not representative of a banking organization's credit
10 risk for non-cleared commodity derivative contracts
11 with commercial end-user counterparties.
12 The supervisory factor for energy commodities
13 means that the proposed rule imposes the most
14 substantial burden on commercial end-users that use
15 customized, non-cleared and non-margined energy
16 commodity derivatives contracts to hedge commercial
17 risks arising from ongoing energy industry operations.
18 The proposed rule acknowledges the disproportionate and
19 negative effect that it will have on commercial end-
20 users and the rule should be changed to address this
21 issue.
22 Commercial end-users due to the type or volume of

1 their swap activity, did not increase or undermine
2 financial integrity within the financial system that
3 resulted in the passage of the Dodd-Frank Act. The
4 regulations adopted today have recognized this and
5 allowed end-users to continue to engage in transactions
6 to hedge the risks associated with their commercial
7 operations and provide safe, reliable energy at just
8 and reasonable rates to their customers.
9 EEI would encourage the CFTC to work with the
10 other regulatory agencies charged with implementing the
11 Dodd-Frank Act to ensure that the new rules are not
12 unduly burdensome or counter to the rules that have
13 already been issued to date. Thank you for the
14 opportunity.
15 CHAIR WIGGINS: Thank you all very much for your
16 presentations. We'll now turn to comments or questions
17 from our Associate Members.
18 Mr. Wasson.
19 MR. WASSON: Thank you. I just want to reiterate
20 everything Lopa said. We joined with EEI in the
21 comment letter that we filed on the prudential
22 regulators NOPR. And it was perplexing to us that the

prudential regulators chose to focus on something in such a punitive way, something of exceptional immateriality, as you pointed out in the global swaps market. And we are interested in this is to be able to hedge our commercial risks to keep our members costs as low as possible because as you know, we're private corporations that operate on a cooperative basis. Therefore, we operate on a not-for-profit basis, so our interest is to keeping our costs low as possible for the benefit of our members. NRECA's members serve 98 percent of all persistent poverty counties in the United States. And so, we have a pervasive and vested interest in trying to keep those costs low.

And Lopa, I think you did a fine job and I appreciate it and thanks to everyone on the panel too, I really was impressed by your presentation. Thank you.

CHAIR WIGGINS: Sue.

MS. KELLY: So thank you Dena. I would just like to pile on here and also support Lopa's remarks. Those of you who follow our industry closely know that this is not an everyday event, that you know, all three of

1 our trade associations are on the same page completely
2 about an item like this. So I think we should duly
3 note that.
4 I will just add a personal perspective in that in
5 the wake of the passage of Dodd-Frank, when I was the
6 general counsel of my association, I spent many hours
7 on these issues down here at the CFTC trying to explain
8 that as commercial end-users, you know, we would hope
9 to be treated differently than some of the other
10 entities in these markets. And it was a long slog.
11 But we got to where we needed to be and I just want to
12 thank all of the Commissioners that we were able to
13 kind of reach that harmonic convergence.
14 But when I read last night on the plane back from
15 Arizona, the comments that we filed with the prudential
16 regulators, it was like Groundhog Day. We're talking
17 to these same issues. We're back into dealing with
18 that with the prudential regulators. And when I got to
19 the footnote that cited the infamous Dodd-Lincoln
20 letter, you know, Senator Chris Dodd, Senator Blanche
21 Lambert Lincoln and saying, you know, whatever we do,
22 we should not mess with the ability of commercial end-

1 users to hedge their activities. And that appears to be
2 what would happen if these rules go into effect that
3 the prudential regulators are proposing without change.
4 So I support Lopa's request to ask you all to work
5 with them to kind of come help -- to the same
6 realization that you had to come to in the wake of
7 implementation of Dodd-Frank and make sure that these
8 customized transactions with, you know, we as public
9 power utilities are units of state and local
10 government.
11 We can't be posting cash for all of these things.
12 We have very high credit ratings. We, you know, have a
13 lot of letters of credit or noncash collateral. There
14 are ways and other ways to kind of get to yes on these
15 transactions. But if we are then forced into a
16 Procrustean bed of cash margining, that's going to be a
17 problem. So I just want to say we appreciate how you
18 all have come to understand our business model and what
19 we do and I hope you can help us with the prudential
20 regulators. Thank you.
21 CHAIR WIGGINS: Matt.
22 MR. AGEN: So unfortunately this is going to be

more piling on, but I do agree with my colleagues earlier. We did join with EEI and we support all Lopa's positions that she presented earlier today. Our members are our end-users. We are the LDCs, investor owned natural gas local distribution companies here in the U.S. We have a vested interest in keeping prices low. We have a vested interest in making sure that there's adequate liquidity in the market and we certainly don't want to see any sort of tightening up with regard to access to financial markets and hedging practices.

So I don't -- to keep this short, I just want to say again and we'd appreciate any effort that the CFTC and the Commissioners can do with working that with the prudential regulators to get potential regulatory burden off our members. Thank you.

CHAIR WIGGINS: Thank you. Paul.

MR. CICIO: Yes, I'd like to just simply go on record that manufacturing, we, as IECA, did send our own letter to the prudential regulators and signed on to it an industry letter of that really espoused the same thing that Sue and Russ and Lopa has provided to

you today. And we say we need help and in a timely fashion. Thank you.

CHAIR WIGGINS: Thank you. Paul.

MR. HUGHES: This is a little bit surreal because we're talking to you, the CFTC, and really we're all kind of griping about something in a different regulatory agency. I think we all acknowledge that, but it does feel a little strange.

The other thing I would like to say, there were a lot of words presented in the last hour but, boy were they substantive. From Rob and Bill, and Vince and Lopa -- really lots of information that was very good. And I think there's one thing, I think, you guys have been very receptive to this. But boy, we never want to underestimate the impact of a regulation. And I don't know that Rob could have given a more compelling story than that.

But I think I would echo what a lot of these other people say. I’m representing an investor owned utility. There were several years ago I had these stats. It used to be that 40 percent of our customer base made $40,000 a year, something along those lines.

I don't know if that's true anymore. We've morphed a lot over the last several years, but I can tell you that a significant portion of our customer base falls on the lowest end of the tax bracket. And I can tell you that everything, every cost makes its way through to somebody to the kitchen table trying to do their budget. And that is something we always have to keep in mind and we have to balance with any of these rules and these regulations.

As somebody -- we use the OTC markets a lot. We do that because it's a cost effective way to hedge on the basis for our customers and we hedge for our customers. That's the primary reason we're in those markets, particularly around natural gas.

And this has been a great discussion today, because all of the topics of kind of intertwined. And so, I think everybody here acknowledges natural gas is growing rapidly. We've got renewables growing rapidly, but natural gas, it's becoming more and more dominant every day, which means that as our percentage of natural gas use grows, that's more and more hedging that we have to do on behalf of our customers to manage

that price risk. So as we talk about cost, it can just kind of, it stacks up on one another. We have to be very careful that that doesn't impact us.

I would simply say that I certainly appreciate for y'all listening. I appreciate it. Commissioner Quintenz this morning saying that he, I guess, signed onto a letter with some of the other regulators. I appreciate y’all's willingness to listen.

But at the end of the day, I think the message is the same. We just want to be able to hedge in a cost effective manner knowing that we could go lots of different directions, but we want to keep that in a way where we can effectively use those markets to protect the customers.

CHAIR WIGGINS: Thank you. Matthew.

MR. PICARDI: Thanks. For the Commercial Energy Working Group where we are producers and suppliers and owners of energy commodities, I just want to reiterate the same thing with the panel said, that we have the same concerns. We filed a letter with prudential regulators that touched on many of the points that the panel hit. So more of a Kum-ba-yah moment with the

other folks that have spoken. Thank you.

CHAIR WIGGINS: And Tyson, before I get to you, let me ask as if our Associate Member who's on the line has any questions or comments.

MR. McKONE: I do not, thank you.

CHAIR WIGGINS: Paul, did you have anything else you wanted to add? No. Okay. Are there any other Associate Members who have any comments or questions?

(No response.)

CHAIR WIGGINS: If not, we will turn to the EEMAC Members and I'll start with Tyson.

MR. SLOCUM: Thank you. I'm extremely sympathetic to the compelling arguments by commercial end-users to seek some regulatory relief from margin requirements in of the other proposals. I sympathize and there are some legitimate opportunities there for relief.

But we do have to remember that there are concrete examples of commercial end-users that failed in spectacular fashion that had profound market impacts that were very harmful. I remember there was an oil storage terminal company called SemGroup that was trading a far and away larger than what it's

1 inventories had. But some of the banks that were swap
2 dealers and counterparties, you know we're not aware of
3 that. Had SemGroup, I believe, if there were some
4 tighter margin requirements in that situation, I think
5 that the market impact of SemGroup’s spectacular
6 failure would have been limited and there would have
7 been less counterparties and downstream customers that
8 would have been hurt.
9 And we have to remember that, especially in the
10 hydrocarbon industry, everyone right now is saying that
11 we are entering a wave of mega mergers, right? We just
12 saw Chevron gobble up Anadarko for $50 billion. This
13 is all about consolidating assets in the Permian. It's
14 consolidating the third and fourth largest producers in
15 the Gulf of Mexico. And everyone's saying, just wait
16 until the next several mergers.
17 So we're going to see intense amounts of
18 concentration among producers, refiners, and other
19 aspects of commercial end-users. And those
20 concentrations, I think, do pose some systemic market
21 risk issues. And, I think, that prudent application of
22 margin requirements protects all of us in the system,

1 especially as we enter this wave of consolidation that
2 we're embarking on. Thank you.
3 CHAIR WIGGINS: Chairman.
4 CHAIRMAN GIANCARLO: Just to make making an
5 observation. This is perhaps for those who might
6 report on the discussions we're having here today.
7 When it comes to the SLR, I don't, certainly speaking
8 for myself, but I don't think for anybody that's
9 discussed -- anybody's talking about getting rid of the
10 SLR, revoking it.
11 This is about one thing. And this is about
12 adjusting the SLR to be less biased against
13 derivatives. And importantly, less biased against
14 clearing, which is one of the core mandates of the G-20
15 and of swaps reform.
16 So sometimes it's been reported on this matter
17 that there's advocates for getting rid of SLR. That is
18 certainly from my point of view, and I think for my
19 fellow Commissioners, not the case at all. The only
20 issue is how do we have an SLR that is not as
21 dramatically biased against the use of derivatives,
22 which are themselves risk-reducing instruments and more

1 importantly and to the point of swaps reform, about
2 working against the very mandate to clear that we
3 believe in, that we're all trying to do so. I just
4 want to clarify that issue. If anybody disagrees and
5 believes it is in favor of getting of SLR, then please
6 correct me. But I believe that the consensus is we
7 have no objection to SLR. It's about making it less
8 biased against swaps, less biased against clearing.
9 CHAIR WIGGINS: Are there any other EEMAC Members
10 who want to make a comment or ask a question?
11 Bill.
12 MR. McCOY: Perhaps in the same vein, I wanted
13 address the fact that with respect to SA-CCR. There
14 were many different recommendations by different trade
15 associations and groups. I think there were of the 50,
16 if I remember right, 56 letters, I think around 35, 36
17 of them addressed some of these concerns with respect
18 to the impact on commercial end-users.
19 As I indicated in my remarks, swap dealers will
20 look at our counterparties. We have to make our
21 decisions based on various market risk limits and
22 credit risk limits that we've established based on

1 robust policies. And in doing so, we make
2 determinations that we need to take some type of credit
3 risk mitigation, which could be going to a counterparty
4 and asking for margin setting thresholds, or it could
5 be alternatively, these other types of risk mitigation
6 liens and such.
7 So what we're suggesting, at least in Morgan
8 Stanley's comment letter, we support the prudential
9 agencies moving toward trying to improve risk
10 sensitivity in how we measure our counterparty credit
11 risk. Our concern is that the regulation as proposed
12 would result in this negative impact. We're not
13 suggesting that there shouldn't be margin based on a
14 swap dealer’s determination of how much credit risk is
15 it willing to take with respect to its counterparty.
16 The whole point is to provide for appropriate
17 approaches with one’s policies and procedures to
18 mitigate those risks, but not to come up with a rule
19 that has a draconian impact. Thanks.
20 CHAIR WIGGINS: Go ahead please.
21 MR. SANDOR: If I can speak for most small bank
22 point of view, which may not be energy related, but I

feel very strongly about what Russ said because we have an exchange called the American Financial Exchange, and many of the small banks do swaps to mitigate interest rate risk. And I think you may get unintended consequences of exactly increasing concentration where there are no economies of scale for these small institutions. They need to hedge and if you make it more expensive, their margins are thin and you may concentrate risk rather than then reducing risk.

CHAIR WIGGINS: Anyone else have any comments or questions on this panel?

Sue.

MS. KELLY: I would just like to say one thing because I deeply respect my comrade at Public Citizen and whenever he says something, I think about it long and hard. So I do want to make very clear here that what we're talking about is not just ignoring risk but different ways to deal with it. And in our comments to the prudential regulators, we noted that their new SA-CCRs -- is that how you are calling it -- methodology fails to appropriately recognize the risk reducing characteristics of noncash collateral. Now there's

1 just more than one way to get to that risk reduction,
2 which I agree is appropriate.
3 And I share your concerns about consolidation and
4 mergers. So I'm with you totally on that, but there
5 are other ways to get the necessary credit support and
6 we as units of state and local government, you know,
7 have a lot of different methodologies of doing that and
8 we would prefer to use those when we can just to make
9 sure that we have the broadest array of tools in our
10 toolbox to mitigate our risk that goes along with our
11 physical business. So I just want to make clear that,
12 just give us flexibility to do it in the best way that
13 works for us and allow our counterparties to accept
14 that.
15 CHAIR WIGGINS: I was hoping today we could at
16 least come to some agreement on how you pronounced that
17 “sacker”, “soccer”. I'm not sure either.
18 But if there are no other comments on, on this
19 panel, I think we'll move into the final remarks and
20 final thoughts that anyone might have. We've heard a
21 lot of informative insights today, lots of interesting
22 discussion; issues that affect many of the market

1 participants and these markets. I want to thank
2 everyone for being here and thank all the members and
3 the panelists for the interesting presentations and of
4 course we look forward to continuing to work with
5 everyone here and with each other on these issues.
6 But I open it up to, to our Associate Members for
7 any final comments by way of wrap up.
8 Anyone? Anyone on the phone? Tim?
9 MR. McKONE: No comments, thank you.
10 CHAIR WIGGINS: Demetri.
11 MR. KAROUSOS: I just wanted to thank the
12 commission again for reorganizing and reconvening this
13 committee and I would like to pile on the praise of the
14 first panel. I thought the thoughtfulness of that
15 discussion and the quality of the reports that was put
16 out was great and would like to commend the Commission
17 on its investment in the data-driven analysis that can
18 only improve policymaking. So thank you.
19 CHAIR WIGGINS: Any EEMAC Members have any final
20 comments, as well? Rob.
21 MR. CREAMER: I just like to leave on the note of
22 listening to everyone talk about risk. You know,

1 Geneva -- speaking for Geneva, but representing the
2 principal trading community, risk is the language we
3 speak, right? We manage risk all day long. That's how
4 we operate and the experience I have, I just wanted to
5 make it clear, we did not lose a dime of our FCMs
6 money. They didn't want to lose us as a client. We
7 provided a vital service in the market. It worked, it
8 worked well for what we had based on the notion of
9 measured risk. What happened was a rule that was using
10 balance sheet for positions that were entirely
11 offsetting and that was the catastrophe there.
12 But I think to the Chairman's point, I embrace
13 SLR. I think the community does, and I think we're
14 just trying to get it right and understand how we
15 improve markets for end-users and how can I provide a
16 service that makes the markets a richer experience, a
17 more efficient experience.
18 I hear constant commentary about what's happened
19 to the liquidity in our markets. Why are we having
20 volatility, spikes of volatility? And I hear over and
21 over again about -- from voices from the industry,
22 about things that are affecting the liquidity in the

1 market, whether it's things happening in regulation.
2 How it's affecting banks now. How it trickles down
3 through FCMs. How it goes from FCMs to their customer
4 base.
5 These are things we have to tackle unless we want
6 to keep talking about liquidity concerns in the market.
7 And I don't think that they're related to risk. I
8 think they're related to, you know, certainly
9 overarching themes. And I know we're trying to solve
10 big problems but these aren't risk issues that I'm
11 concerned with.
12 CHAIR WIGGINS: Tyson.
13 MR. SLOCUM: I just wanted to draw attention and
14 applaud the Chairman's comments earlier this morning
15 when we were talking about the Market Intelligence
16 Branch and you noted accurately that it takes money to
17 finance this and drawing attention that the CFTC needs
18 additional resources to do excellent job policing the
19 markets, providing the data-driven analysis and
20 research. And I know that the Chairman's call for
21 funding is shared by the rest of the Commission.
22 And I would love to see this Advisory Committee

1 come together with some sort of statement. We might
2 diverge on a number of different issues, but I think we
3 can all agree that the CFTC needs and deserves
4 additional funding to carry out its mission and
5 objectives. And I hope that this Advisory Committee
6 could come to agreement on a formal statement to that
7 effect at some point soon. But thank you Mr. Chairman.
8 CHAIR WIGGINS: Thank you again, everyone for
9 being here and for participating and for all the
10 thoughtful comments. And I will turn it back to
11 Abigail.
12 MS. KNAUFF: Thank you Dena. I now recognize
13 Chairman Giancarlo to give his closing remarks.
14 CHAIRMAN GIANCARLO: Thank you Abigail. Thank you
15 Dena. Thank you Commissioner Berkovitz, Members and
16 Associate Members. Thank you members of the audience
17 for an excellent day today.
18 I learned a lot. I felt that the presentations
19 were extremely substantive. And so, I thank all of you
20 for all the work that went into that.
21 I just want to make a brief comment on a
22 conceptual thing that comes up very often whenever

we're talking about any of the core market reforms that were put in place as part of the G-20 process. We often talk about them in language of let's not go backwards. If we're discussing an adjustment, let's not have the risk of going backwards. This notion of backwards and forwards, I think it's a bit of a false narrative.

I actually think that the process of calibrating the reforms to make them work and in the case of SLR, to make it less biased against another one of the reforms which was clearing, it's not a matter of going forward, it's a matter of actually fixing it so we can get on with it so we can incorporate it in a way that it's meant to do, so that we can move forward.

And so, I think I just want to say that let's be careful about language, about any adjustment to what we've done and what I think is now uniformly embraced and agreed has improved things. It’s not a question of going backwards. It's a question of getting it right so we can then move on with it.

In the case of SLR, as Sue said, it's like Groundhog Day that we've been talking about this. I go

back to the prior Commission under Chairman Massad when we advocated for these same adjustments that we're still talking about here three years later,

Let’s -- if we can convince the other regulators to get this right, to make the adjustments so it's less biased against clearing. We can actually move forward. What's holding us back is the fact that the unwillingness to make these adjustments that should be made so that we can have a clearing regime that is not counterproductive, that doesn't double count, that doesn't cost us.

So I really believe that we all agree moving forward, and to do that, we must calibrate the reforms so they work the way they intended in the first place.

So with that, I once again, thank you all and pass the microphone back.

MS. KNAUFF: Thank you Chairman. Commissioner Quintenz, any final remarks?

COMMISSIONER QUINTENZ: Just quickly, I’d like to build on the Chairman's comments and thank you all to the members and to the participants, the panelists for being here with us today and for your fine thoughts and

your expertise.

If we think about the presentation this morning from the Market Intelligence Branch and think about the prior work that they've done, including the presentation at the TAC, I can say with some high degree of confidence that that type of data analysis is really an expertise and a specialty of this Commission in the financial regulatory landscape in Washington.

And the more we rely on good data and good analysis, the more we will diminish unintended consequences of rules. I don't really believe in the term unintended consequences. I think that's a fig leaf for bad decision-making. The more we actually rely on data and analysis and the more we can provide our fellow regulators with our own data analysis, I think we'll move forward as the Chairman said to a better place to recalibrate appropriately.

Thank you.

MS. KNAUFF: Commissioner Behnam.

COMMISSIONER BEHNAM: Thank you Abigail and Dena, as well, for your work today and Commissioner Berkovitz for your leadership. A great day. Thanks to all the

1 members for your participation in the discussion.
2 Regarding the SLR, I'll echo the comments of the
3 Chairman to the extent that I think it's good to hear
4 that folks around the table support the SLR generally,
5 but it's about proper calibration. I think as we think
6 about this issue and advocate. For me personally, you
7 know, on behalf of end-users, and Sue thinking about
8 the drafting of the legislation and the point of it,
9 ensuring that end-users are able to access markets and
10 manage risk and discover price is key and paramount.
11 And we need to continue to do that and do anything we
12 can to ensure that that remains the case.
13 With that, you know, we have to be measured in our
14 approach about how we do things. And in the context of
15 any capital reforms, obviously we need to think about
16 what the financial ecosystem looked like prior to the
17 crisis and what it looks like now and ensuring that any
18 one entity within a larger family of entities is not
19 passing risk unintentionally onto another and causing a
20 sort of larger issues within the financial system.
21 So I'm encouraged by, you know, the sort of
22 unanimous thought and approach by the Committee, and

hopefully, we'll be able to address this in a thoughtful way that both balances the needs of end-users, but also many of the important reforms that were almost a decade ago.

So thanks again.

MS. KNAUFF: Thank you Commissioner Behnam. Commissioner Berkovitz.

COMMISSIONER BERKOVITZ: Well, first thing I'd like to say is I'm going to revel in this opportunity to have the last word.

(Laughter.)

COMMISSIONER BERKOVITZ: I'm going to take advantage of that and, and I'm going to actually echo a lot of the remarks of people who've gone before me and including the Chairman and my fellow Commissioners.

And one, one thing I'm struck and as I was reviewing my statement, getting all the footnotes right and I have to have the cite for the Dodd-Frank objectives. And I went back to the G-20 statement just to get, is this exactly what the G-20 said? Can I put it in a citation to it? And I'm looking through it and there's all this stuff in there on energy, which, you

1 know, as I go back and look at G-20, all I've been
2 generally looking at myself as on the financial side.
3 But G-20 has a whole bunch of objectives on the
4 energy side to increase energy security, to improve the
5 regulation of the energy markets, to develop new energy
6 supplies. Because as I said initially, where we were
7 in 2008 right before the financial crisis, all the
8 energy markets were in great turmoil here in the U.S.,
9 globally. There was a crisis of confidence, not only
10 in our financial markets but in our energy markets.
11 And we were facing, I remember vividly in 2008, $147
12 per barrel.
13 I was down at a conference in Houston and the
14 question was, you know, peak oil. When are all of our
15 domestic supplies going to run out? How quickly is
16 Texas is going to dry up? And I'm sitting here at 10,
17 11 years later and we're talking about, you know, that
18 we're surpassing Saudi Arabia and Russia in our oil
19 production. And it's absolutely remarkable.
20 And not only that, but listening to the exchanges
21 to Brian and Ben and Demetri about the increasing
22 liquidity in our futures markets. Not only have we

been successful in the development of our energy supplies, but we've restored confidence in these markets and now we continue to be the global leader in energy markets, as well as in energy production.

And we can have our cake and eat it, too. If there's anything we've learned from the past decade is that strong regulation and strong markets and strong energy sector go hand in hand. The investment community has the confidence and the technology and then the people in the industry that are taking the money and investing it, and then put it in the market, and that those markets are secure and fair and there's accurate price discovery and they're not going to get cheated and the markets are free from manipulation.

So I think all of that is a success story. And we've heard a lot of that success story here today. I don't view the issues that we've been discussing in the afternoon as a trade-off. I mean, we can have strong capital requirements and we can have a strong energy sector and we can have the ability for all the market participants to hedge. It's not a question of sacrificing one or the other, but it requires work.

1 And Sue, I think you very articulately stated that
2 we spend a lot of time, I spend a lot of time when I
3 was first here, trying to get all that right and
4 exactly how to do that is not easy.
5 I mean it requires a lot of work by the market
6 participants and coming to us, and then there's a lot
7 of interests that we have to take into account and that
8 our fellow regulators, the prudential regulators, have
9 to take into account, too. So a lot of it depends on
10 your efforts and coming to us and going to them and us
11 talking with them to get that right.
12 But I think we can make this work so we have the
13 strong capital requirements and we have a strong energy
14 sector, and we have an ability for all the end-users to
15 hedge effectively at low costs. But it requires a lot
16 of work to get exactly how to do that in the right way.
17 So I'm optimistic given where we've been in the last 10
18 years that we can productively go forward and address
19 this issue going forward.
20 It's been a great meeting. I thank all the market
21 participants for your contributions, for your time, for
22 making this a success. I'm extremely honored to be

sponsoring this committee.

When I first came to the Commission last September, I think the committee had been canvased once about potential topics of what folks wanted to address and I thought that was a very productive process for developing the agenda. So I would just suggest going forward as we look to the future, we'll keep in touch on that.

We focused today on the energy side of the EEMAC. There's the environmental side of the EEMAC, which I don't think has been addressed in a number of years, as well. So if there's opportunity to look at environmental market issues that may be something I would definitely welcome member input. But it, obviously, for you to decide. But I would encourage that type of -- that perspective. Maybe if there's something in a future meeting we can examine.

So again, I thank the members of the committee. Thank Dena. Thank Abigail. Thank you Mr. Chairman. And I thank my fellow Commissioners and the CFTC staff are making this event a success today. Thank you.

MS. KNAUFF: Thank you all, this meeting is now

adjourned.

(Whereupon, at 3:35 p.m., the Energy and Environmental Markets Advisory Committee meeting was adjourned.)