NATIONAL PETROLEUM COUNCIL MEETING

TUESDAY, DECEMBER 15, 2020

2:00 P.M.

Reported by: Karen Willoughby, CER

I N D E X

	PAGE:
Call to Order	3
Remarks by the Honorable Steve Winberg, Acting Undersecretary of Energy	4
Report of the NPC Cochair's Coordinating Committee	15
Comments by Vice Chair Darren Woods	23
Update on Post-Approval Activities for the 2019 Dynamic Delivery and Dual Challenge Reports	24,36
Study Impact Remarks by Shawn Bennett	47
Administrative Matters	57
Closing Remarks	65

P R O C E E D I N G S

- - - - -

(Meeting called to order, 2:00 p.m.)

MR. L. NICHOLS: Good afternoon, ladies and gentlemen. It is my pleasure to call to order the 130th Meeting of the National Petroleum Council and the first virtual meeting of our Council, and I imagine we all hope it's the last.

Welcome to all of you, members of the Council, honored guests, members of the press and public. What I think we'll have today is a very productive and important meeting. If there are no objections, I will dispense with the calling of the roll. For members of the Council, the online registration will serve as our official attendance record.

We also have an online YouTube audience that will be able to watch a livestream of our proceedings. This audience will include the press, public, as well as, I'm sure, many members who participated in the two study reports that our Council approved at this time last year.

I would now like to introduce to you and for the record the participants who are joining me at our virtual -- our so-called virtual head table. First, we have the Honorable Steve Winberg, Acting Undersecretary

of Energy. We then have Darren Woods, who is NPC Vice Chairman. We have Ryan Lance, who is Chair of the NPC Agenda Committee; and we have Marshall Nichols, who is the Executive Director of our Council. We will be joined later by Byron Dunn, who is Chair of the NPC Finance Committee, and by Jim Hackett, who is Chair of the NPC Nominating Committee.

Our first order of business is to hear from Acting Undersecretary of Energy, Steve Winberg, who is representing Secretary Brouillette today. Most of you already know Steve from his roles, both as Assistant Secretary for Fossil Energy and as the Government Co-Chair of the Carbon Capture Studies Coordinating Subcommittee.

More recently, Steve was designated by the Secretary to be his representative for the future study topics that we will discuss later in our agenda. Steve is also the designated federal officer for NPC matters. And, Steve, we're particularly grateful to you for all the cooperation and support you and your Fossil Energy staff have shown during this past year's process.

Steve, your remarks.

ACTING UNDERSECRETARY WINBERG: Well, thank you, Larry, for that introduction and for your leadership. I also want to thank Marshall and everyone

at NPC for their tremendous work. On behalf of Secretary Brouillette I'm honored to join you all today. As I'm sure some of you know, the Secretary is taking part in an energy ministerial in Greece today, along with the energy ministers of the UAE, Israel, and Bahrain. This ministerial is a result of the Abraham Accords Peace Agreement. So the Secretary sends his regrets, and he asked me to convey to you the importance that he places on the relationship between the Department and the National Petroleum Council, as well as his respect and appreciation for your work and your service.

As you know, the Secretary recently appointed 12 new members to the Council, and I want to welcome all of those members who have joined us here today. Since 1946, the NPC has completed scores of detailed studies on all aspects of the oil and natural gas value chain. And because you can always be counted on to provide advice that is insightful, balanced, and grounded in analysis and knowledge of industry operations, you have earned the respect of the industries and organizations you represent and the policymakers that you advise.

So I wanted to echo Secretary Brouillette's sentiments that DOE's relationship with the Council is

tremendously important. We are fortunate that the Council stands ready to share its advice and its expertise. I've seen firsthand what you've accomplished over the last four years. Your infrastructure and CCUS reports have provided clear, valuable roadmaps to improving the nation's oil and natural gas transportation infrastructure and in deploying commercial CCUS technologies at-scale in the U.S. energy and industrial marketplace.

These reports are clearly helping to catalyze constructive and more informed public dialogue on energy options and challenges, and they'll be useful in informing future DOE program and policy decisions. So thank you for that impressive work and your contributions to DOE's efforts in these areas.

I think that we can all agree that 2020 has been a challenging year and more challenging than any of us could have predicted when we met last December. Oil and natural gas companies and the communities in which they operate have been hit particularly hard, and some are still struggling. At the same time, though, we see that our nation's oil, natural gas, and electric power supply chains are fundamentally strong, and your industries continue to be of vital importance to the nation's energy and economic security.

Over the past year, you've delivered energy -- reliably and safely -- every day. You've provided essential services and have worked with governments to strengthen emergency preparedness while responding to hurricanes and evolving cybersecurity threats. And even while you were doing these things and more, the energy industry, including the oil and gas sectors, donated $100 million to COVID-19 relief, from fuels to medical supplies to PPEs.

That you've done all of this under extremely difficult and trying circumstances confirms that -- in case there was any doubt -- your industries are resilient, your capability to produce and deliver energy remains fundamentally strong, and oil and natural gas remain as important as ever to our economy and our livelihoods.

Industry's performance during the pandemic has been invaluable, and it parallels the ingenuity and dedication to service that has transformed the U.S. energy landscape from one of energy scarcity to energy abundance. So today, we're in a stronger place than we were just ten years ago, and as we look beyond the current environment, we see that the fundamentals are there for a robust market recovery.

As we end this year, the U.S. continues to be

the top producer of natural gas, and daily production of dry natural gas is estimated at 91 billion cubic feet per day in 2020. And we expect to average nearly 88 BCF per day in 2021. While these levels represent declines from last year's record-setting production levels, we expect production and exports to return to previous and even higher levels as the economy fully opens up.

Speaking of exports, the Trump Administration has been steadfast in its support of LNG exports, and the U.S. is now in its fourth consecutive year as a net natural gas exporter. And the numbers are impressive. Since we began exporting LNG from the lower 48 states in February of 2016, U.S. LNG has reached 38 countries on five continents, marking 20 additional countries since the beginning of the Trump Administration. And U.S. LNG exports set a new monthly record just last month, averaging 9.4 billion cubic feet per day, after temporarily decreasing to just over 3 BCF per day over the summer, during the height of the shutdowns.

At the end of the day, though, the rate of exports has quintupled since 2017, and the U.S. remains among the world's top three LNG exporters in the world. And with a current export capacity of nearly 11 billion cubic feet per day, we're poised to be the global

leader in natural gas exports. However, there remains work to be done to reach this goal. Recently, there has been increased pushback on U.S. LNG on environmental grounds, particularly from the EU. We're confronting this challenge head on, and DOE is leading U.S. Government efforts with our counterparts in the EU to highlight the transparency of our full natural gas value chain and how the environmental performance of our natural gas sector continues to improve.

So even with this summer's short downturn, the rate of exports has quintupled since January of 2017, and the U.S. remains among the world's top three LNG exporters in the world. And with a current export capacity of nearly 11 billion cubic feet per day, we're poised to be the global leader in natural gas exports.

So we are confronting these challenges head on. We're talking to the EU, and we are going to continue these efforts to make sure that our allies and our partners over in Europe understand that we have transparency in our life cycle analysis.

So that's where we are. I think there's still a lot of work to be done, and at the end of the day, the fact remains that oil and natural gas will continue to underpin America's energy security and provide benefits across a wide swathe of economic sectors.

Clearly, COVID-19 does not change that. So let me focus for just a moment or so on these benefits.

You may have heard that the Department recently released a new report, U.S. Oil and Natural Gas: Providing Energy Security and Supporting our Quality of Life, which is available on our website. If you haven't already, I encourage you to read the report. It underscores the important benefits of oil and gas production over the last 20 years -- benefits that Americans take for granted every day and might not attribute to oil and gas production. And it highlights the key technology advances that have been made that have made those benefits possible.

Oil and natural gas now provide more than two-thirds of the energy Americans consume daily, and natural gas is the largest contributor to the nation's electric power sector. And as the world moves toward a low-carbon future, continued use of oil and natural gas will remain an integral part of this transition.

But looking beyond the power sector, the report notes that oil and natural gas provide the feedstock for a broad range of items across the healthcare, agriculture, automobiles, home construction, consumer products, and renewable energy industries. And oil and natural gas are revitalizing

the U.S. petrochemical manufacturing industry, providing billions in trade deficit reductions with LNG exports, supplying high-tech materials, and creating well-paying jobs across the country.

Your expertise, your innovation, and your commitment have made these advances possible, and we at the Department of Energy are proud that our investments in research and technology development and our collaboration with you have helped you drive this historic transformation. It's been said many times that the Shale Revolution was a game-changer, that our vast oil and gas resources have transformed America, and for that matter, the world's energy landscape, and that this resource has fueled strong economic growth, making our lives safer and more comfortable.

But I for one do not think that the Shale Revolution story is yet fully told. There's more to come -- more understanding of shale seams, more ways to improve productivity, more ways to reduce the environmental footprint, and perhaps, most importantly, broader uses of the resources as we look toward hydrogen. There's an enormous potential to expand the production and the benefits of our oil and natural gas resources.

At the Department of Energy, we've been

partnering with industry to make energy production cleaner and more efficient. We've been applying artificial intelligence, machine learning, and high-performance computing tools to help make it possible to process and interpret complex data streams in real time and increase the production of unconventional oil and gas.

We're also tackling produced water challenges, and we're working to advance the smart pipelines of the future to enhance the operational efficiency of our supply and delivery infrastructure, improve pipeline integrity, and detect, locate, and measure methane emissions.

One of our biggest challenges has been to remove the infrastructure roadblocks to natural gas delivery in different regions, including the Northeast and West Coast. That's been a priority for the President and the Administration, and we've worked with other federal agencies to examine economic and other impacts associated with those barriers.

We've also streamlined our LNG authorization process under NEPA with a new categorical exclusion for the marine transportation of LNG. And we've expedited the permitting for small-scale LNG experts to help expand the benefits of U.S. natural gas to our allies

and partners around the world. And to lock in the long-term benefits of our LNG exports and provide additional regulatory certainty for U.S. exporters, we recently finalized a policy to allow all current long-term, non-FTA authorizations to be expended out to the end of 2050. In fact, just last week, we extended the terms of seven long-term authorizations. That follows the ten extensions we issued in October.

We're also working with our local, state, and federal government partners to harness the abundance and the benefits of the Shale Revolution to help advance a petrochemical renaissance in Appalachia. And we're looking at natural gas generation as a continuous and low-cost source of hydrogen, which when coupled with geologic storage can provide reliable sources for energy production for electricity production, industrial uses, and transportation.

We've seen important progress and accomplishments across all of these areas, but we wouldn't be there, where we are, without a strong collaboration with industry. We're not only important -- you're not only important partners, but you're also leading the way in many areas to strengthen our energy security, grow our economy, and help shape the future energy landscape here at home and globally.

And if we're going to realize and maximize the full potential of our oil and natural gas resources, the Department of Energy will continue to need your capabilities, expertise, and input. That's why the NPC's continued advice and counsel is so important and so valuable, and that's why Secretary Brouillette requested the Council to identify potential high-value, high-impact study topics for the consideration of DOE. Several ideas identified by Council members have also been on DOE's radar screen: hydrogen, for example. I know this will be a part of the discussion today, and I want to thank Agenda Committee Chair Ryan Lance for championing this effort.

I'd like to close on a personal note. During my tenure at the Department of Energy, I've led or participated in a number of initiatives and activities to strengthen American security and power historic economic growth. I've been fortunate and proud to be part of those efforts and to serve in an Administration that strives every day to unleash the full potential of America's oil and gas resources.

And as I look back on these years, one of the things that stands out is my involvement with you and the progress we've made toward those goals, but there's still a lot of work to be done, a lot of challenges to

be met and overcome, and I'm confident that just as you have throughout your impressive history the National Petroleum Council will be in the forefront on those efforts.

So thank you for your service to the Secretary, the Department, and the nation. I look forward to our discussion today.

Now, if there's time, I'm happy to take a few questions.

MR. L. NICHOLS: Thank you, Mr. Undersecretary, Steve. You said if there are any questions, just click the "raised hand" icon and we will recognize you.

Seeing none, we will move on. The next item on our agenda is to receive a report of the NPC Co-Chair's Coordinating Committee. As a reminder, this Committee was established in the early 1900s to provide a means by which a predefined and representative group of Council members could sit down and meet with the Secretary or other officials in the Administration to determine if there were any matters of concern to either the Government or the oil and gas industry or both of us that would be appropriate for Council considerations.

At the start of this current pandemic, the

health and energy emergencies we've had this year, the Secretary reached out to the Council for individual views on the situation and any actions that the Government might take to address the impacts of the situation we've been under the last nine months.

The CCC met at the Secretary's request in April and had a very candid conversation with Undersecretary Mark Menezes and Assistant Secretary Steve Winberg. As a followup, we had a workshop to better understand and amplify the concerns of CCC members on crude oil storage issues, and the Council remained available to the Secretary and the Administration as the events unfolded.

Earlier this fall, I met with both Steve Winberg and Secretary Menezes on the desirability of us identifying and prioritizing certain possible issues that might be perceived in the current -- in the coming year, in 2021. Secretary Brouillette agreed with that proposal and subsequently formalized his charge to our Council. Accordingly, the CCC, as we've done in past transitional years of the presidency, is developing a list of the high-value, high-impact study topics that might be appropriate for the Council to discuss with the new Secretary of Energy sometime next year. Ryan Lance, as the NPC Agenda Committee Chair, has agreed to

lead this effort on behalf of the CCC.

Ryan, give us an update.

MR. LANCE: Thanks. As you mentioned in the -- the Coordinating Committee requested the Agenda Committee to look at some of those six topic areas, and we were pleased to do that, and one of the first actions that we took was to form a Study Topics Subcommittee. And that subcommittee has made great progress. They've narrowed in on six potential topics for presentation to the Secretary in the new year.

As Larry mentioned, in September, I was asked and we asked a person at ConocoPhillips, Ore Owodunni, to work with the Deputy Assistant Secretary, Shawn Bennett, on developing ideas of potential studies that the NPC can undertake in 2021, if we were asked to do so by the Secretary, which I understand we have been asked. So they took a pretty inclusive approach by adding representatives from NGOs, from think tanks, from environmental justice committees, and communities to that subcommittee.

I want to thank everyone who contributed to this important work. This includes not only the dedicated people at the DOE and representatives from many of the companies here today, but also certainly Marshall Nichols and his team at the NPC.

And let me take just a brief minute to recognize those companies that participated in the subcommittee. They included the American Energy -- American Association of Blacks in Energy, Apache, Center for Strategic and International Studies, Chevron, Clearview Energy Partners, Columbia University, ConocoPhillips, Entergy, Enterprise Products, Exxon, Halliburton, IHS Markit, Lazard, Next Era Energy, Occidental Petroleum, Ovintiv, Phillips 66, Plains All American Pipeline, Resources for the Future, Shell, Williams Companies, the U.S. Department of Energy, and Valero Energy. So thanks to all of them who participated in the study.

As I looked at the six topic areas -- I think we'll ask somebody to explain those a bit more for the NPC and the membership -- but I think they were apolitical in nature. I think they're a balance and a tradeoff between breadth and depth. And I think all are expected to be of critical, even strategic, importance to the U.S. energy complex over the next five to ten years.

Now, one of the topics, and that's the strategic petroleum reserve topic, is a bit more tactical in nature, maybe doesn't represent that longer five-to-ten-year time frame, but was certainly strongly

encouraged by the Department of Energy staffers. So at this point, I'd like to turn over the presentation of those potential topics to John Dabbar with ConocoPhillips, and he's standing in for Subcommittee Chair Ore who couldn't be with us today.

So, John, why don't you take us through a brief description of each one of the six topic areas that are recommended to the Secretary.

MR. DABBAR: Thank you, Ryan. So the six topics in no particular order of priority that the team is currently evaluating and writing problem statements for, the first is called the Market Mechanisms to Enable Decarbonization, looking at both the existing studies on carbon pricing but with two critical subtopics to be studied: one on the policy durability and the other on how market-based policies in other areas can complement a carbon price.

The second topic is titled Navigating the Dual Challenge, which is an evaluation of an emissions reduction scenario, for example, the IEA sustainable development scenario, and evaluating the socioeconomic challenges and opportunities of an energy transition focusing on domestic energy workers, businesses, and communities, along with the technological challenges and opportunities we looked at and characterizing the

potential role of the oil and gas industry in supporting that deployment.

The third project is called Responsible Natural Gas Development and Production. The thesis there is that supplies of natural gas around the world have varying carbon and methane footprints, and the ability to assess in a transparent and consistent method those intensities of global natural gas value chain that has the potential to support the global competitiveness of U.S.-produced natural gas.

The fourth study is Roadmap for At-Scale Deployment of Hydrogen, where the thesis is hydrogen has the potential to decarbonize a variety of market sectors, including industrial, commercial transport in residential and serving as an energy storage mechanism when coupled with renewables. And the power and petroleum and infrastructure companies all have extensive experience in developing and deploying technologies that hydrogen will require at-scale.

The fifth study is associated with environmental social and governance actions and has three subtopics: what actions can a company take to ensure that ESG metrics are tangible, achievable, and integral to a business strategy; what is the potential for a nationwide program to plug orphan well sites; and

are there innovations or best practices that can help advance meaningful progress to a more sustainable stakeholder engagement process.

Finally, the Strategic Petroleum Reserve Study, the scope that was requested by DOE, which the team is supporting in a problem statement, is during this past year, the exchange for storage program was opened up. DOE received bids from U.S. companies to have the SPR temporarily store U.S. production, and the study would look at the value of that EFS program and what level of capability the industry would see as valuable.

Those are the six studies that are currently being worked on by the group, and following this meeting, the Study Topics Committee will reconvene on Friday to align on next steps with the goal that during Q1 of next year the Subcommittee would refine those topics, taking into account your feedback -- councilmember feedback -- and eventually going through an approval of the CCC and presenting to the membership, at which point the National Petroleum Council and DOE would sit down with the Secretary and decide which of the -- if any of the topics would be actionable.

That's my report, Ryan. Back to you.

MR. LANCE: Thank you, John.

And, Chairman Nichols, we would now turn it over to you and any members of the Council that might have questions or comments on the six different areas, such that the Subcommittee can take those comments into account as they work with the Department of Energy and formulate a response to the Secretary's request. So we would turn it over to you to take any questions and comments. We'll be standing by to answer any questions that may come up and hopefully get some comments from some of the membership on the Council.

MR. L. NICHOLS: Sure. If you have a question, click the "raised hand" icon on your computer, and we will answer the questions. While we're waiting to see if we have any, this, of course -- this whole process puts us in an excellent position to deal with the new Administration because they'll already have got both our thoughts on topics that may be of interest, as well as the staff, the people at the Department of Energy now, which will put us in an excellent position to move forward very expeditiously as soon as the new Secretary of Energy is appointed.

I don't see any questions, so we will move on. Next, I'd like to call on our Vice Chair, Darren Woods, for any comments you'd like to add.

MR. WOODS: Thank you, Larry. Thanks, Larry. I would just commend Ryan and the work that the team did on pulling together the topics. I think -- I suspect, Larry, many of the members -- we've got a lot of good feedback on the carbon capture work that we did previously, and so as I reflect on the opportunities moving into the next Administration, and the opportunity to do some work -- meaningful work to help influence policy. I think we've got to keep, you know, the risk of climate change and the drive in that space kind of front and center, and I guess one perspective I would share with the group and for the Committee to consider is I think the success of carbon capture in that report was the focus that we brought to that topic and the meaningful work, the in-depth work, that the group did. And it feels like an opportunity to take another part of this very complex and challenging task ahead of us of, you know, solving the dual challenge of supplying affordable energy and maintaining national energy sources and national security while addressing climate change, finding another opportunity to focus on -- to advance those objectives would make a lot of sense.

So I think the hydrogen study makes a lot of sense to me. It's narrow enough to allow us to do an

in-depth piece of work and has great promise with respect to the challenges that the nation faces and, indeed, the world faces.

I think the natural gas study also has some of the same potential, although albeit a little bit broader. That would be my comments, Larry. Thank you.

MR. L. NICHOLS: Thank you. It will be very interesting to see how this unfolds next year when the new Secretary is there and we can have the conversation on these topics. And, of course, the old topics that we approved last -- the reports we approved last December on carbon capture, as well as infrastructure, are going to be critical topics to be discussed going forward. Having those studies available to us during the coming year will be very helpful.

In fact, that is the next item on our agenda, is to get an update on what has happened to those two studies in the year that's passed since we last approved them. First up is Amy Shank, who is the Chair of the coordinating subcommittee that produced the infrastructure study, Dynamic Delivery.

Amy, bring us up to date.

MS. SHANK: Thank you, Mr. Nichols. And I wanted to say thanks to the members and staff at the NPC, as well as the members of the DOE. So for anyone

who wasn't here last year when we presented this study to the Secretary or doesn't sleep with it under their pillow like many of, I'm sure, the committee members who worked on the study do, I'm going to give you a recap of the Secretary's request. I'm then going to provide you with a brief overview of the key findings and recommendations. And, then, finally, I'm going to talk about the outreach that the study committee members have done over the last year and what we still hope to do.

So back in 2017, the Secretary of Energy, Rick Perry, formally requested that the NPC perform a study on oil and natural gas infrastructure, which eventually became the outstanding body of work called Dynamic Delivery: America's Evolving Oil and Natural Gas Transportation Infrastructure. Secretary Perry asked the NPC to provide an overview of the existing oil and natural gas infrastructure and the need for additional infrastructure to address potential changes as supply and markets develop in new locations.

All infrastructure means truck, rail, marine, and pipeline, and all commodities mean oil, oil products, gas, and gas liquid products. He asked us to review and understand any constraints and bottlenecks that could arise, in particular, constraints that might

limit the industry's ability to continue to produce and grow U.S. oil and natural gas production.

He asked us to evaluate technology advances that can improve the efficiency, resiliency, efficiency, and environmental performance of the infrastructure system and to identify any regulatory or policy changes that infrastructure development -- and any potential solutions for bringing new technology online.

He also asked us to look at any emerging topics which really ended up being around the area of cybersecurity. All of these topics are significant in their own right, which is why the study required the expertise from multiple perspectives and segments within the industry.

Before we leave the slide, I want to take a moment here to talk about how the study might be viewed in the light of the economic impacts of COVID-19. The COVID-19 pandemic certainly modified the near-term supply and demand projections, but we believe that over time, the trajectory of our findings will not change. We're confident that this study provides insights and recommendations that will be enduring for our nation's oil and gas infrastructure moving forward.

Now we can move on. The beauty of NPC

studies, as compared to those conducted exclusively by industry or government agencies, is the diversity of the participants that the NPC seeks out. The NPC infrastructure study included over 300 participants, including representatives from most of the major oil and natural gas companies, transportation companies, including pipeline, marine, rail, and truck sectors, various governmental agencies, such as the DOE, the Department of Transportation, Department of State, Department of Interior, FERC, and the Army Corps of Engineers, as well as state government representatives, Native American tribes, consulting and financial sectors, NGOs, labor organizations or representatives, academia, and many others.

You can see from the chart that less than half of the participants who worked on the study are actually in the oil and gas business directly. The intent behind assembling such a diverse group was to allow for different perspectives to be considered and to make recommendations that will allow us to move jointly ahead, rather than continue to have a very divided perspective on how infrastructure is permitted and constructed. Using a consensus process to determine which findings and related recommendations should make it into the final study report was our

goal.

The study took us to places that sometimes made us uncomfortable. Sometimes, it was challenging. In the beginning, I stated that when we got to the place where no one got everything that they wanted we would know that we'd found the right landing spot. Next slide.

The Infrastructure Mapping and Analysis Task Group analyzed the value of our existing infrastructure, as well as its resiliency. It's probably no surprise that this task group found that there's been tremendous economic value generated in the areas of economic growth, job creation, increased exports, improved manufacturing competitiveness, and market efficiency benefits to households and businesses.

I'm going to highlight just a couple of these benefit areas. In terms of economic growth alone, our oil and gas infrastructure is responsible for 7.6 percent of our GDP, 10.3 million direct, indirect, and induced American jobs, and $714 billion in labor income, and that was just in 2015.

I also think it's worth mentioning the ability to use our existing infrastructure to align supply to the customer's demand has led to stabilized or reduced

electricity prices and an increase in energy choices for consumers. But it's not all sunshine and roses. The IMA chapter found that our existing infrastructure, while very flexible and resilient, has flexed about as much as it can. To continue to have these benefits into the future, more infrastructure is going to be needed. Next slide, please.

This chart shows just a few of the different demand scenarios we considered. When we were in the midst of the study, just as there is now, there was a lot of talk about how renewables are going to significantly reduce or even eliminate the need for oil and natural gas, but the data tells a different story. One of the standout findings of the study is that no matter what scenario you look at, even the low-carbon, high-renewable scenarios, America's need for oil will remain significant, and the demand for natural gas will continue well into 2040.

This is in line with what I tell my kids who think electricity comes from the wall, the reality is that we're going to need it all. We're going to need oil and gas and a smorgasbord of renewables to continue to meet the demands of our nation. Next slide, please.

So as the demand for oil and natural gas will remain significant, we know from history that the

supply locations will most likely continue to shift. The Shale Revolution is a great example of shifting supply centers and has been a monumental change for the industry, resulting in significant shifts of supply sources and changes in interview flows across the country.

This chart shows the dramatic growth and shift from 2005 to 2018 in both oil and natural gas production. If you were to overlay the largest demand centers, you would also see that the impact that all of this has had on our infrastructure, truck, rail, and marine have increased our capacity and rearranged their shipping patterns to move oil to market. Pipelines have been repurposed, reversed, or expanded in several areas to ensure natural gas gets to where it's needed most. Next slide, please.

So this is a great example of where a picture is worth a thousand words. This is the permitting process map for a single interstate natural gas pipeline project. It is included in the study not as a how-to but to drive home the key finding that overlapping and duplicative regulatory requirements, inconsistencies across federal and state agencies, and unnecessarily lengthy administrative procedures have created a complex and unpredictable permitting process.

Navigating these processes has become a challenge and an unpredictable endeavor, making it difficult for companies to properly evaluate and plan these investments. The process is steeped in regulatory bureaucracy made more difficult by unclear, conflicting federal and state policies and limited agency staffing.

A 2019 Council of Environmental Quality study analyzed the length of all environmental impact studies in a recent five-year period across all federal agencies. The study found that the EISs that started out to be about 150 pages back in the ‘70s and ‘80s now average 669 pages with final appendices that average more than 1,000 additional pages.

Permitting challenges often delay and sometimes prevent construction of infrastructure, which can lead to higher energy and electricity prices, constrained economic development, and a lack of power reliability in periods of high demand. Though the study made several recommendations on how the process should be clarified and streamlined, while still maintaining the integrity of the review process, much of the recommended language mirrors the language in the CEQ’s recent proposed rule language for modernizing NEPA reviews. Next slide, please.

Another issue that makes permitting infrastructure projects difficult is the increased challenges of stakeholders that connect the development of oil and natural gas infrastructure with the negative impacts on climate. In the study, a key finding was that the nation faces the dual challenge of providing affordable energy while addressing risks with climate change. The NPC shares this concern that climate change is a serious issue requiring action but sees fighting individual projects in the courts as an inefficient way to achieve change.

The NEPA review process has become a leading basis for litigation and challenging agency decisions on energy infrastructure. The uncertainty over NEPA interpretation has led to expanded reviews and delays in permitting, but ultimately most projects -- about 80 percent -- have eventually moved forward. Next slide, please.

Two of our key recommendations address climate change concerns. The first is aimed at industry, while the second is provided for the Government. The first one is that oil and natural gas industries should continue to work to improve their environmental performance. The formal language is “all oil and gas infrastructure companies should strive for outstanding

environmental compliance records and continue to work to reduce greenhouse gas emissions from their operations." This commitment to reducing emissions and improving compliance performance can be demonstrated through participating in many existing voluntary programs like those listed on the slide.

The second recommendation was developed to improve clarity to the NEPA review process while providing a better process for stakeholders to address their concerns about climate impacts. The two parts of this recommendation are intended to be enacted simultaneously and read that "Congress should clarify that greenhouse gas assessments under NEPA are confined to emissions that are proximately caused by the federal action and reasonably foreseeable and that Congress should enact a comprehensive national policy to reduce greenhouse gas emissions and harmonize federal, state, and sectoral policies. The policies should be economy-wide, applicable to all sources of emissions, market-based, transparent, predictable, technology-agnostic, and internationally competitive." Next slide, please.

The last chapter of the study looks at technology advancements that should be pursued to improve safety, reliability, and environmental performance. We make recommendations for where and how

investment can be made by both industry and the Government, with many being recommended in partnership. We also look at the regulatory requirements for approving the use of new technology and make recommendations to specific agencies about how the path to approval can be safely shortened.

Finally, we took a deep dive into the cybersecurity challenge that the oil and gas infrastructure industry is facing. These challenges are growing every day due to increased connectivity and escalating threats. We make multiple recommendations to improve the efficiency with which industry and the Government are already working together in this space. Next slide, please.

So before all of our travel plans were suspended, we had several in-person meetings. Just to name a few, Shawn Bennett and I presented at the Natural Gas Committee of NARUC; the study leadership presented and fielded questions from multiple congressional staff and representatives as the list you can see there. There was a well-attended event hosted by BPC's principal and coordinating subcommittee member Jason Grumet and Williams CEO and study chairman Alan Armstrong and others. Members of the study committee met with multiple federal agencies to inform them of

the study overall and the recommendations specific to them. These included DOT, CEQ, FERC, DOE, DHS, and DOE -- DOD.

For the balance of the year, we took advantage of virtual platforms such as Webex conferences and even recorded a podcast at CSIS. Many of these presentations were recorded and are available for viewing or listening at the study website: dynamicdelivery.npc.org.

I also wanted to take a minute to mention that many of the participating industry companies like Williams have been utilizing the study to further their ESG efforts and inform the way we talk about our industry in terms of being a valuable and necessary part of the transition to a lower-carbon future. Next slide, please.

And, finally, this is a list of agencies and organizations that we still have plans to pursue. The study makes recommendations specifically to the members or policies of this organization, and many are important stakeholders who would benefit from knowing more about the study.

So with that, I'll conclude my piece of the presentation and either answer questions or hand it back to Mr. Nichols.

MR. L. NICHOLS: Amy, thank you very much. That study is just as timely today as it was a year ago when we approved it. And it will see a whole lot of activity, I'm sure, during the coming year.

Our next item is an update from Cindy Yeilding, who was the Chair of the Subcommittee that produced our CCUS -- Carbon Capture, Use, and Storage -- report called Meeting the Dual Challenge.

Cindy?

MS. YEILDING: Thank you very much, Larry. Good afternoon to you all, and thanks for having us here today. It's been a year since Study Chair John Minge and I shared the Carbon Capture, Use, and Storage Team's finding and recommendations with you. On behalf of the study team, we deeply appreciate the Council's support of our work. The objectives of today's update are to update -- to remind you of the key messages of the CCUS study, to provide information on the report and the engagement activities over the past year.

So on the next slide, we'll see here's where it all started. In September 2017, the Secretary of Energy requested that the NPC conduct a study to define the potential pathways for integrating CCUS at-scale in the U.S. Secretary Perry's letter highlighted some specific lines of inquiry, including what is the energy

outlook for both the U.S. and the world, what technical barriers must be addressed to enable us to move forward, what policy, regulatory, legal, and other issues must be addressed to progress investment, and what actions can be taken to frame public policy and to stimulate investment in CCUS here in the United States.

So in the next slide you'll see, as Amy said, one of the best parts of an NPC study is the broad range of participants. This study is the first to look holistically at the entire CCUS supply chain and economics, including all sources of CO2, not just oil, gas, and coal. To address this, we assembled a team of over 300 members. Only about a third of this diverse group are from the oil and gas industry, while the balance of study participants represent a broad range of other industries, as well as academia, government, NGOs, financial, and insurance sectors.

So when we talk about CCUS development at-scale, as a study team, we debated the role of CCUS in a clean energy scenario quite a bit. We'd like to remind you that while carbon capture, use, and storage is not the only answer, we determined that it's an important role in an all-of-the-above solution to reduce emissions and that, yes, CCUS should be a critical part of the U.S.'s decarbonization strategy.

In addition, CCUS technologies under research and development today offer the best potential approaches to achieve a negative emissions scenario, which may be required to reduce excess carbon dioxide directly from the atmosphere. CCUS is one of the only technologies that allows industrial sectors to decarbonize -- certain industrial sectors to decarbonize, including oil refining, chemicals, ethanol, concrete, and steel sectors.

And, finally, as we shared with you last year, in its fifth assessment report, the IPCC concluded that the costs for achieving atmospheric two-degree-C world would be twice as expensive without CCUS. So in that conversation, we also spent an incredible amount of energy defining sort of what “at-scale” meant. And as a team, we agreed that at-scale deployment as capture and storage or use of 500 million tonnes of carbon dioxide per year would be a significant and robust target for at-scale. This represents about 20 percent of the current U.S. stationary source emissions, or 10 percent of the total U.S. CO2 emissions. Remember, this starts from a baseline of about 25 million tonnes of carbon dioxide capture today.

So just to remind you of some of the key messages of the report, we framed the study in the

context of the dual challenge of providing more energy to support growing global populations while reducing greenhouse gas emissions. As you're all aware, this is one of the fundamental challenges facing our society today. The study reached ten findings and supported these with data, insights, and sets of recommendations as appropriate.

At the highest level, the key messages of the study include the United States is the world leader in carbon capture and is uniquely positioned to deploy CCUS at-scale. CCUS can be deployed today; however, the economics of carbon capture are challenging, and deployment at-scale requires clarity, stable and enduring policy and regulations, and incentivization to catalyze development.

We also found that investment in research development demonstration will very, very likely create further applications and potentially drive down costs. We believe that these actions can stimulate a new industry in the U.S., creating jobs, capabilities, and economic growth for a global marketplace. And, finally, stakeholder engagement is critical to successful implementation of CCUS at-scale in the U.S.

So three of our key findings were focused on phases of deployment that we defined through detailed

economic modeling that we'll describe in a couple of slides. Our initial phase -- activation -- is delivered by mobilizing the industry through clarification, a federal tax policy, and regulations, something the U.S. has made great progress on this year. Doing this is boosting investor confidence and should allow the United States to double our current annual CO2 capture capacity over the next five to seven years.

Our next phase, the expansion phase, will require the support of Congress and regulatory agencies to update existing policies and increasing financial incentives to create a durable legal and regulatory framework. We predict these moves will actually enable a five-time expansion of carbon capture in the next 15 years.

Finally, our analysis determined that moving to at-scale deployment, by building on the policies enacted in Phases 1 and 2, and in this case using technologies available today, will require significantly increased incentives, as detailed in the report. With this support, we can reach at-scale deployment within 25 years, enabling a 20 percent reduction in U.S. stationary source emissions and hopefully catalyzing a whole new industry for the U.S.

So on the next slide, as we've seen through a similar commitment to renewables research, we believe that additional RD&D will lead to further innovation, performance improvements, and cost reductions over time. The study included detailed analysis of current and future capture, transport, use, and storage technologies. Each of the technology teams did a fantastic job of describing the current state of technology development, as well as laying out a set of priorities for RD&D moving forward.

These priorities became the basis for recommendations on research and development, detailed in the final report. At the highest level, the recommendation of $15 billion allocated for research, development, and demonstration over the next ten years reflects kind of a roughly threefold increase in current budget levels.

So a little bit about the report. Since we saw you last, we've actually completed the report, and it's 600 pages long. So for your convenience, you'll see on the next slide that we've also included a two-page roadmap that summarizes the phases of development, state of technology, and the highest priority recommendations. So if you don't have time to really, really dig into the study, the roadmap, which is

included in the executive summary and highlighted in many of the talks, would be a great sort of quick reference for the highest level study findings.

What we also wanted to highlight for you guys today is as we began the study, it became clear that we needed to understand the costs associated with CCUS deployment in order to determine the actions necessary to enable progress. We always called this the elephant in the room, and it was -- you know, we had several elephants, but this was one of them. And, so, the team worked really, really hard to try to best understand and compile the costs of doing CCUS across a number of sources and technologies in the U.S.

This led to what we believe is one of the differential elements of the study, the CCUS cost curve, which is depicted here on the roadmap. The purpose of this was not to identify or understand the economics of any specific project but to understand the level of financial value needed to incentivize and catalyze the development of the CCUS industry using available technologies.

We used a set of standard transparent assumptions. They're all documented in the study, and the study team calculated costs to capture, transport, and store the largest 80 percent of stationary source

emissions in the U.S. from both the EPA's emissions database plus emissions associated with U.S. ethanol production.

So on the next slide, we just sort of highlight what is actually in the report. So since the last time we talked, we've actually published our report. The final study is structured in three volumes with the first volume being our executive summary, the roadmap, and a summary of all the recommendations from the study.

The second volume provides an analysis of CCUS deployment at-scale, building the case for CCUS and the role it could play and will play in the future energy mix, describing the CCUS supply chain and its cost based on using currently deployed technology. This volume also describes the current and required policy, regulatory and legal framework for deployment of CCUS, and highlights the critical role of engaging stakeholders to achieve deployment at-scale.

Our third volume provides an analysis of all the current and emerging CCUS technologies across the entire supply chain -- capture, transport, storage, EOR, and use -- and builds the case for continued research, development, and demonstration of those technologies.

Volume 1 -- here it is -- is printed and available in hard copy. And Volumes 2 and 3 will be available in print before the end of the year. All of these are available as -- and downloadable in PDF form from the NPC website. And, of course, we encourage you to download them and refresh your knowledge of the CCUS study.

So, next, we'd like to update you on our study outreach. So the CCUS Study Team and the NPC obviously have a commitment to share study results. We created a master set of study products, and those were developed for outreach. And a subset of our coordinating subcommittee, task group leaders, and researchers were named to our communication team.

Despite the restrictions of the year, our team has had over 40 opportunities to share the key messages of the study and to direct folks to the report on the NPC website for further information. We also have more engagements scheduled in 2021, and if your organization would like to know more, please contact John Guy at NPC and he will happily arrange a presentation from us.

We'd also like to talk about some of the areas of impact. In case you missed it live, we do have some recordings of the study events available in video from several of the presentations, and these can be found at

Meeting the Dual Challenge Report downloads on the NPC study. We are happy to say that one of those presentations actually led to a resolution from the IOGCC endorsing the recommendations of the NPC report, which we were very proud to receive.

A little bit more about one of the products we created as we built the cost curve and did our economic analysis. One of the most popular products or tools from the study has been the cost assessment tool, which was graciously developed and maintained by GaffneyCline. A link to this tool can be found on the NPC website. This includes online and spreadsheet versions of the integrated cash flow model that calculates the revenue required to fund installation and operations for capture, transport, and storage.

These can help the user determine the impact of project duration, CapEx scheduling, debt-to-equity financing, depreciation, duration, and other terms that help enable translation of the NPC CCUS study assumptions into the user's own sort of specific situation.

We're thrilled to say that we have over 400 users to date for the cost assessment tools, and they come from a broad range of business, academia, government backgrounds. So I'd encourage, if you've

got some questions and you'd like to run a couple of different model scenarios, please head to the NPC website and find your way to this tool.

Finally, a couple of publicly known applications in the policy and economic foundation work include the University of Houston's and Center for Houston's future regional assessment of CCUS costs in the Port of Houston area and Georgia Tech's regional assessment of CCUS costs in the U.S.

We also believe that the study has provided a foundation and a framework for the NPC members and the broad participants in the study to help frame priority issues and reflect diverse stakeholder views through a consensus as -- on 45Q policy.

So I think with that we just can't end this by -- without an acknowledgment to many, many different entities. This was a global effort, and one that we best describe as a labor of love. Our deepest appreciation to the guiding lights at Team DOE, to the National Petroleum Council team, and to our colleagues in the infrastructure study.

And, finally, we'd like to thank -- to recognize and thank the over 300 participants around the world, the authors, the task group leaders, the coordinating subcommittee, and our core team for their

commitment to the study. We benefitted greatly from your broad range of experiences and your diverse perspectives on CCUS, and you've made the study into what we believe is one of the most comprehensive studies to date on CCUS. Thanks to all of you for sharing your experience, your passion, and, most of all, your patience with us. Thank you very much.

MR. L. NICHOLS: Cindy, thank you. That report is going to remain a valuable resource in this area for many, many, many years to come. A herculean effort, and you and all that team did a wonderful job. So thank you.

MS. YEILDING: Thank you.

MR. L. NICHOLS: Our next update is to talk about how these two reports have been used inside government. And to do that, we want to call on Shawn Bennett, who is the Deputy Assistant Secretary for Oil and Natural Gas and Fossil Energy and is also the Government Cochair for the infrastructure study.

Shawn?

MR. BENNETT: Oh, thank you, Mr. Nichols, and thank you, Cindy and Amy. That was really great work. And, you know, being part of the outreach team, I can say the fact that you're able to achieve, you know, so much outreach in such difficult circumstances is

nothing short of amazing. I can't really -- I can't wait to hear about more future outreach, and hopefully it will go from, you know, virtual to in-person as the vaccine is distributed here over the next year or two.

And I really -- I can't say enough about the roadmap that Cindy showed on the CCUS study. I think, really, I mean, looking at it, it's really a great piece of work, and I think it may need to be used more when discussing the implementation of new ideas because you guys really did the homework to show everything that had to go into it to make it work.

Next slide, please. And, you know, again, I'd like to say a big thank-you to the NPC members and state participants for all their work on these two studies. I think we had more people working on these two studies than there are members of Congress. So, I mean, it was a herculean effort to really bring both of these studies to their final published state. And it's really just, you know, again, the effort, the time, and, you know, just the volunteers, it's really -- you know, it's really awe-inspiring.

So I probably -- and, again, I think as Mr. Nichols mentioned, I'll probably be talking a little bit more about the Dynamic Delivery than Meeting the Dual Challenges, just for the pure fact that I was

directly involved with that study and really worked this in my role at the Department, but, you know, both studies delivered a substantial amount of actionable advice, and we've really gotten an idea of really what the two studies cover.

But some of these are the top-line items that the Department was hoping to learn more about and, you know, think about, you know, enabling, you know, an all-of-the-above energy transition to continue the -- to continue to deliver the benefits of America's energy resources, both at home, as well as abroad, infrastructure needs in the context of both studies, you know, Dynamic Delivery for more traditional oil and gas transport, where, you know, Meeting the Dual Challenge for the transportation of captured CO2, and areas where technology advances are needed for both topics at hand, from materials sciences for pipelines to innovative uses for captured CO2. Next slide, please.

For each study, when looking at, you know, how recommendations applied to the Department of Energy, we sorted them really into a few buckets. For Dynamic Delivery, those were streamlining the permitting process, enhancing recent regulatory reform efforts like FAST-41 and One Federal Decision, promoting the

development of energy resources to continue delivering their benefits, both home and abroad, and promoting the development and adoption of technologies to improve the transportation, safety, and integrity, with cybersecurity included.

And really for, you know, meeting the Dual Challenge, you know, we saw those buckets as really being understanding the CCUS supply chains and economics, enabling the deployment of CCUS through policy and regulation, and really the role of CCUs in a future energy mix.

And, so, you know, with Dynamic Delivery, you know, Dynamic Delivery asked for continued cooperation and investment from government and industry on midstream R&D. Some examples of the work we're currently doing at DOE laboratories are really improving the pipeline materials and inspection technologies to boost resiliency and reliability for our midstream infrastructure, looking at improved transmission and distribution efficiency for natural gas from the well head to the burner tip, and really using AI and predictive analytic tools to identify, measure, and mitigate methane emissions.

And this is something that, you know, we continue to see more interest in, especially as we have

had a continued dialogue with the European Union and some of those conversations, both with France and the European Commission, and their focus on what we're doing here in the United States and really how would that be implemented in other parts of the world.

And, then, also developing conversion and utilization technologies to reduce vented and flared gas, essentially just upcycling that natural gas, you know, potentially from turning it into hydrogen or capturing it and turning it into carbon fibers, or even into the typical, you know, butane -- b.techs and the methanol. So, you know, these are all ideas that really kind of came through the Dynamic Delivery that we're already implementing within the Department of Energy and FE30.

Next slide. Now, with Meeting the Dual Challenge, you know, also requested significant R&D investment, and the captured storage of CO2 included enhanced oil recovery, and our ongoing work in that area is really included in a lot of field labs. The Department of Energy and the Office of Oil and Natural Gas, you know, we have 17 field labs throughout the United States, and we've already focused -- we're focused on basin-specific strategies, so looking at each one uniquely and seeing how we can get better

wells, whether it is through unconventional or conventional development, whether it's new wells or also enhanced oil recovery. So, you know, we currently have enhanced oil recovery utilizing CO2 in, you know, a handful of our projects in the Bakkan and unconventional, in Michigan, partnering with Battelle, and going in an oil carbonate formation there in Michigan, as well as a couple in Texas as well. So, you know, really seeing how we can utilize CO2 capture -- capture CO2 with, you know, other gases as well to see if we can improve the EOR of a lot of these wells.

And then applications of AI, big data, machine learning to understand the reservoir conditions of both storage and EOR purposes, and, you know, the continued funding for cost share [brief audio lapse] that capture and store CO2 emissions from [brief audio lapse] $31 million announcement that we put out this past April for initial engineer and design of CO2 capture from industrial sources and engineering scale testing of transformational combustion of CO2 capture technology. So, you know, we really took the learnings from Meeting the Dual Challenge and acting on those as soon as we could because there's a lot of good work to be done in that arena.

Next slide, please. Now, for the

infrastructure study, we analyzed the societal benefits that America's increased energy production has brought with it, both in terms of economic prosperity and energy security and improved export capacities that can really deliver more of those benefits, both at home and abroad. So, you know, the Department of Energy has sought to streamline the permitting process for LNG facilities in our office, the Office of Oil and Natural Gas, and remove those regulatory burdens to the development of additional infrastructure -- export infrastructure.

So recent approvals, West Coast facilities at Alaska LNG and Jordan Cove really can improve our access to the Asian markets for American natural gas, as well as several projects in Mexico that will help get into those Asian markets as well.

Next slide, please. Sorry. So for Dynamic Delivery, you know, it really discusses the ways to ease the regulatory burden on midstream operators, adoption of both new and innovative technologies that can improve the reliability, safety, and environmental performance of our oil and natural gas infrastructure.

You know, this in-line inspection tool is really just, you know, one example of that, you know, this technology is better at detecting pipeline

features that may develop issues in the future, but, you know, really the regulatory acceptance lags behind, and the existing regulations can discourage operators from using tools that pinpoint potential issues that older technologies would have missed. So we're collaborating with other agencies and industry to develop an agile pathway for the adoption of these technologies, because the quicker we can get them into the field, again, the safer we can make our infrastructure and make sure that we're bringing it all up to date.

So, you know, with -- America's infrastructure, you know, has been adapting to the connectivity revolution by incorporating more sensors, more controls, high-performance computing, predictive maintenance strategies to really make energy production and delivery more efficient and reliable; however, while these devices can improve the natural gas supply system efficiency, they can also pose security challenges, causing utilities to rethink their cybersecurity infrastructure. And Dynamic Delivery discusses the cybersecurity issues for midstream operators and details.

So, you know, the Department of Energy CESER Office supports our -- supports the research and

development to identify and mitigate those potential vulnerabilities and works with midstream operators to share that information on threats that are identified. So we -- once we finished the study in December, we wanted to make sure that our CESER Office had that and was able to implement that and use that the best way possible over the past year.

And in really, you know, many scenarios with decarbonization targets, hydrogen -- and Undersecretary Winberg mentioned this here at the beginning -- you know, hydrogen is an important part of that proposed energy mix, and I really see hydrogen as sitting in some ways at that intersection of these two studies. You know, much of what applies to the natural gas transport in Dynamic Delivery will also be important to developing the needed hydrogen infrastructure, and what we learn about the capture and storage of CO2 will ultimately apply to, you know, some important methods of hydrogen production.

So the Offices of Oil and Natural Gas and Clean Coal and Carbon Management are collaborating on the production and transportation of blue hydrogen. So, you know, really one example of our work is the materials science challenge associated with the pipeline transport of hydrogen. So in theory, a blend

of up to 20 percent of hydrogen and natural gas can be transported without modifying natural gas pipelines. Modifying the same pipelines to carry pure hydrogen, however, requires addressing a number of issues, including the potential for embrittlement of some seals and sealing difficulties at fittings that are tight enough to prevent natural gas from escaping but not possibly -- possibly, but not hydrogen. So, you know, again, we recognize that hydrogen is playing a more important role, and we want to make sure that from an Office of Fossil Energy standpoint that we're really at the forefront of a lot of that research and development.

And moving forward, you know, I just can't go without saying -- I really would like to acknowledge that, you know, while certainly nobody working on these two studies anticipated, you know, a COVID-19 pandemic or its impact on the energy and really other world markets, and while those unexpected events can cause short-term uncertainty, you know, there is a trend toward a strong energy market recovery, both at home and around the globe.

You know, the oil and gas industry really stands to be a big part of the United States' economic recovery, and it's always been and continues to be an

important contributor of direct employment and economic impact and also powers our economy and supports our way of life with low-cost and reliable energy. And really the insights and recommendation from both of these studies really still ring true, even in the face of this unprecedented situation. It really helped shed a light on the path forward for the oil and gas industry as we continue to navigate the energy transition.

So, you know, in closing, the Department of Energy really looks forward to seeing more of that same insight moving forward on topics that will really be vital to America's energy future. And it has been a pleasure to work with the NPC during my tenure here at DOE and also working on the study topics project. This has really just been a great opportunity, and thank you all.

MR. L. NICHOLS: Shawn, thank you very much for that report, and equally, thank you for all you've done at the Department of Energy. It's been a real help to our industry and to the country, and we appreciate that and we acknowledge that.

MR. BENNETT: Okay, thank you.

MR. L. NICHOLS: So thanks.

But we now need to turn to two administrative items. The first one is the Finance Committee, which

is headed by Byron Dunn as the Chair. After Byron's report, we'll have a poll to indicate whether the members of the Council approve, disapprove, or wish to abstain from his report. We'll leave that poll open for a minute or two to give you a chance to register to vote.

So, Byron, take it away.

MR. DUNN: Thank you, Larry.

And in addition to reviewing periodic or form its reports throughout the year, the Finance Committee has met twice this year to discuss our Council's finances, once in May and again in early -- late last week. Our May meeting was called to order to reassess the Council's 2020 budget and member contribution in light of the daunting challenges faced by the industry with the impact of the pandemic and, of course, the corresponding role of price collapse.

At that meeting, the Council's officers, the Finance Committee members, and staff conducted a very rigorous examination of the Council's finances to significantly reduce a previously approved budget for 2020 that we talked about last year. The cost-cutting measures included salaries, rents, study operations, and G&A reductions that resulted in a revised 2020 budget in the amount of $3.6 million, which is some 40

percent less than our 2019 budget.

Concurrently, the Committee decided to set the individual members' level contributions at the same amount that the contributions were requested in 2019, but we were offering those with hardship or with unable to pay the full amount of the contribution to contribute a minimum that will equal to 60 percent of the 2019 contribution amount.

So early last week, the Committee convened again to discuss a variety of topics, including the review of Calendar Year 2019, and that's the draft audit report, with Johnson Lambert & Company, the Council's outside auditors. And I'm pleased, and I know you will be, that the auditors provided the Council a clean opinion letter, which agrees with our financial -- which agrees that our financial controls are sound.

The Committee also reviewed the 2020 projected year-end expenditures and contributions collections. The Council anticipates that 2020 spending will meet the aforementioned revised budget target of $3.6 million, so we're in good shape there, but it will also include expenses needed to complete or -- expenses we've already had before us to complete the editing and preparation of the carbon capture and the

infrastructure study reports -- publications. And, by the way, Cindy and Amy, you all did a great job.

As another sign of the times, the Council printed only a limited number of copies of the study for the participants as a thank-you for their efforts. As you heard previously from Amy and Cindy, these reports and related study materials are available to download from the National Petroleum Council website. Those wishing a hard copy have the option to purchase it through Amazon's Print on Demand -- Amazon's Print on Demand service.

Contributions collections are currently anticipated to come in more than 75 percent of the total amount requested, due mostly to the fact that the majority of our members contribute the full amount suggested, foregoing their offer to pay a discounted level. I wanted you to know that the Council's officers, the Finance Committee members, and the staff understand and greatly appreciate the financial sacrifice that these contributions represent.

Finally, the Committee discussed and agreed upon the proposed 2021 budget in the amount of $3.992 million. This proposal leaves in place all of the discretionary spending cuts that we put forth earlier this year, particularly in salaries and the GNA costs.

While we continue to manage at the current constrained level, we have provided in this budget for actually reopening in the second half of next year, including the possibility of an in-person Council meeting. And this budget proposal also provides initial funding to begin work of any new studies that are requested by the Secretary.

The Committee further recommends funding the 2021 budget with individual contributions at the same amount that we requested for 2020, leaving in place that option for those who are having a tough time and aren't able to pay the full amount, they can pay a minimum of 60 percent of our request.

The Finance Committee and the National Petroleum Council management recognizes the dire economic challenges facing Council members, and accordingly we have worked diligently to scrutinize the Council's annual budget line item by line item to minimize costs in a way that reflects the industry's continued hardships. Management -- your NPC management have been sent a clear message and will continue to be proactively frugal while being responsible to the Council's mission. I believe this budget is reflective of those efforts.

Subject to your approval, the budget and

contribution recommendations the Council will send -- we will send individual 2021 member contributions request out early next year. I encourage you to respond expeditiously upon receiving those requests, and I have a little footnote. For those of you who have not yet gotten around to paying your 2020 contributions, 'tis the season. Please consider doing so before the end of the year.

Mr. Chairman, that completes the report of the Finance Committee, and on behalf of the Committee, I move that it be adopted by the Council membership.

MR. L. NICHOLS: Thank you, Byron, for your help on this report and being -- serving in this job for some time. But we now have a motion to approve the report of the Finance Committee. If you have any discussion, again, hit the raise hands. If there are none, the poll will show up on your screen, and you can take the poll and we'll announce the results.

While we're doing that -- and I will pause here and make my own vote -- while we're doing that, I'd just like to reemphasize a couple of Byron's points. One is great appreciation for the very positive response that most of you did by sending in your full dues for the year. And second I wanted to really recognize Marshall and his staff who did an

outstanding job back in March and April to immediately identify the nature of the problem we had and take extraordinary efforts in cutting their own salaries and coming up with a budget, as Byron said, that was 40 percent below last year's budget between the team.

That puts us in a very sound financial footing for this next year, and I heard your "merry Christmas and send in your dues now" statement. The 2021 contribution request will go out sometime in January, so we appreciate your prompt response to that.

And I now see that the finance poll has exceeded a majority, so thank you very much for that. And we'll move on to our final item today, which is the Nominating Committee, which is chaired by Jim Hackett.

Jim?

Is Jim Hackett with us?

MR. M. NICHOLS: Jim Hackett is not logged in, sir.

MR. L. NICHOLS: Okay. I guess we will not have that report. It was the Nominating Committee, which was going to reelect pretty much the slate that we had. Do you want to go over, Marshall, that report on the full nomination? I don't have that in front of me.

MR. M. NICHOLS: I will be happy to do that,

and I'm sorry that Jim was having some difficulties with his connection to the Webex.

The Nominating Committee has met to review its nominations for the officers of the Council and the members and chairs of the Agenda and Appointment Committees, and the five at-large members of the Cochair's Coordinating Committee. Accordingly, the Committee has recommended for the Council Chair Larry Nichols; the Council Vice Chair, Darren Woods.

For the Agenda Committee, the Committee has recommended Alan Armstrong, Deb Caplan, Bob Catell, Greg Garland, Ray Hunt, Gretchen Watkins, Bill Way, Bill White, Mike Wirth, and Dan Yergin as members, and Ryan Lance continuing to serve as the Chair.

For the Appointments Committee, the Nominating Committee recommends for its members Nick Akins, Joe Gorder, David Grzebinski, John Hess, Terrence Jacobs, Mike Linn, Jeff Miller, Pierce Norton, Scott Tinker, and John Walker, with Vicki Hollub continuing to serve as the Appointment Committee Chair.

MR. HACKETT: Hey, Marshall, this is Jim. Can you hear me?

MR. M. NICHOLS: Yes, I can, Jim.

MR. HACKETT: I am so sorry to you and Larry, but I was muted by the host, as it turns out, so I

didn't have any ability to join in, for which I apologize. You did a better job than me, Marshall, but I'm happy to finish if it's more official.

MR. M. NICHOLS: Oh, well, you go right ahead.

MR. HACKETT: Thank you, sir.

MR. L. NICHOLS: You got here just in time. We were about to elect you to some new job. I hadn't decided what yet.

MR. HACKETT: Oh, gosh, I'm ready to go again. Suit me up, Captain.

So in addition, we recommend the following to serve as the five at-large members of the Cochair's Coordinating Committee: Joe Gorder, Mike Graff, Doug Suttles, Jim Teague, and Frank Verrastro.

And that completes the report of the Nominating Committee, and on its behalf and with thanks to its members, I move that the above slate be elected until the next organizational meeting of the Council, Larry, and thanks to you and Darren for offering to lead us again next year.

MR. L. NICHOLS: Thank you, Jim. We have a motion. We'll now have the poll appear on your screens, so please vote for that. I don't see any questions there, so while that poll is being tabulated, I have some comments to make.

There's one piece of unfinished business. Last year at our annual meeting, which was in person, right after I had been promoted to the Chair, I planned to say a few words but Greg Armstrong immediately adjourned the session and I did not have that opportunity. It is pure speculation on my part, but I suspect he knew that if I had got a hold of the microphone, I would have had the opportunity, which I would have taken, to thank him for his extraordinary effort in service as the Council Chair, not just for a two-year term but for a three-year term because he took over unexpectedly when Rex Tillerson, his predecessor, stepped down as NPC Chair to go into the Administration.

So we all want to thank again -- and I thank you now, Greg -- for your service to the leadership of this organization, which was, as I said, for three years rather than two. If we were having this meeting in person, you would undoubtedly be called upon for a standing ovation, and this organization would have stood up and given you a standing ovation.

We have now -- the polls have closed, and a majority has voted for that slate. So we will carry on next year, which should be a challenging but interesting year. Ladies and gentlemen, let me --

before we adjourn, if there are any other members who have any questions quickly raise this hand.

Seeing none, I will thank all of you for your past help for this organization. Next year, we're going to need it again, because we're going to have a challenging situation, but we're well positioned, both in terms of the topics we developed, as well as our finances, to charge into next year, 2021, with some enthusiasm.

So with that comment, I wish everyone a happy holiday. We're adjourned. Thank you.

(Whereupon, at 3:35 p.m., the meeting was adjourned.)

CERTIFICATE OF REPORTER

I, Karen Willoughby, do hereby certify that the foregoing proceedings were recorded by me and reduced to typewriting under the supervision of For The Record, Inc.; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were transcribed; and further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of the action.

KAREN WILLOUGHBY, CER