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NATIONAL PETROLEUM COUNCIL ANNUAL MEETING

St. Regis Hotel  
923 16th Street NW  
Washington, DC 20006

December 18, 2014

9:00 A.M.

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1 APPEARANCES

2 The Honorable Ernest J. Moniz,

3 Secretary of Department of Energy

4

5 Mr. Charles Davidson, Vice-Chair of NPC, Moderator

6 Mr. Rex W. Tillerson, Chair,

7 Committee on Arctic Research

8 Ms. Carol J. Lloyd, Chair, Arctic Research

9 Coordinating Subcommittee

10 Mr. Marvin E. Odum, Chair,

11 Committee on Emergency Preparedness

12 Mr. Margaret C. Montana, Chair, Emer. Preparedness

13 Coordinating Subcommittee

14 The Honorable Elizabeth Sherwood-Randall, Deputy

15 Secretary of Energy

16 The Honorable Adam E. Sieminski, U.S. Energy

17 Information Administration

18 The Honorable Christopher A. Smith, Assistant

19 Secretary for Fossil Energy

20 Mr. Marshall W. Nichols, Executive Director of NPC

21 Mr. Gregory L. Armstrong, Chair

22 Mr. Robert B. Catell, Acting Chair

1 P R O C E E D I N G S

2 MR. DAVIDSON: Good morning everybody.

3 I'm not Jim Hackett. I shrank overnight. Jim gets  
4 to join the club of many of us where he had a plane  
5 cancellation late last night and so he was not able  
6 to make it in.

7 So I'm Chuck Davidson, I'm Vice Chair of  
8 the National Petroleum Council and I'll be chairing  
9 today's meeting. And I want to welcome everyone to  
10 the 124th meeting of the National Petroleum Council.

11 So why don't we go ahead and call the  
12 meeting to order. I'd like to welcome all the  
13 members of the Council, honored guests, members of  
14 the public, and press as well.

15 I think we really have a great meeting  
16 today. We've got two studies that have made  
17 tremendous progress, one which will be submitted for  
18 action to the Council today.

19 First, just a safety moment. Fortunately  
20 we are on the ground floor of this building, but  
21 there are no scheduled fire alarms for today, so if  
22 we do hear an alarm we'll evacuate through the back

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1 doors of the room and then you can exit either to the  
2 courtyard or out to the lobby to the main street. So  
3 that is our safety moment.

4 So if there is no objection, I'm going to  
5 dispense with the calling of the roll and for members  
6 of the Council, the check-in room, hopefully if you  
7 came through there, that will be the record of  
8 attendance.

9 If you did not check in or if you are an  
10 observer for a member and you did not check in,  
11 please stop by on the way out so that our minutes  
12 will properly reflect all who have been in attendance  
13 today.

14 Also, as many of you are familiar, we've  
15 got an extended audience with us today. The main  
16 part of the meeting, up until we get to the  
17 administrative actions will be on webcast and so we  
18 do have others who are joining us outside the room.

19 At the end of the meeting, the  
20 presentation slides will be available, as well as if  
21 the Emergency Preparedness Study's final draft is  
22 approved, it will be posted on the NPC website as

1 well.

2                   Now I'd like to introduce the head table.  
3 I think most of you know everyone up here, but on my  
4 fight here is the Honorable Ernest J. Moniz,  
5 Secretary of Energy, of course. Mr. Secretary we're  
6 very pleased that you joined us today. We look  
7 forward to hearing some of your comments later this  
8 morning.

9                   Next to the Secretary, our two Study  
10 Chairs, Marvin Odum, Chair of the NPC Committee on  
11 Emergency Preparedness and Rex Tillerson, Chair of  
12 the NPC Committee on Arctic Research.

13                   Next to Rex is Adam Sieminski,  
14 Administrator, of course, of the Energy Information  
15 Administration, and he is also a former member of the  
16 Council. And also, Adam has worked extensively on  
17 the Emergency Preparedness Study that we'll hear  
18 about this morning, and his organization is central  
19 to one of the key recommendations of that study.

20                   On my left is the Honorable Elizabeth  
21 Sherwood-Randall, our new Deputy Secretary of Energy  
22 -- Welcome. Thank you for being here today.

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1                   Next to Liz is Chris Smith, who many of us  
2 know, who's just been confirmed by the Senate to be  
3 the Assistant Secretary for Fossil Energy. So  
4 welcome and congratulations Chris.

5                   And then finally, next to Chris is  
6 Marshall Nichols, our Executive Director of the  
7 Council.

8                   So let's move on and our first item of  
9 business is a report from the NPS Study on Arctic  
10 Research. I'd like to call on Rex, Chair of the  
11 Committee, who reviewed the progress of Committee to  
12 date and their schedule for completion. Rex.

13                   MR. TILLERSON: Thanks Chuck and morning  
14 everyone. I've got a slide deck that I will take you  
15 through the first two or three and then I'm going to  
16 have the Chair of the Coordinating Committee come up  
17 and really take you a little deeper into where we are  
18 with the study.

19                   But -- see if I get the slides right -- so  
20 this first slide, the Arctic Research Study was  
21 undertaken by the Council in response to the  
22 Secretary's request in his letter of October 2013,



1 and we've summarized the essential question the  
2 Secretary put to the Council in the box up there:  
3 What research should the Department of Energy pursue,  
4 and what technology constraints must be addressed to  
5 ensure prudent development of Arctic oil and gas  
6 resources, while advancing U.S. energy and economic  
7 security and ensuring environmental stewardship?

8           So the objective of the study obviously is  
9 to address those questions that were raised by the  
10 Secretary in his letters, and in doing so, we also  
11 know that this study is going to support a number of  
12 other issues as well, including implementation of the  
13 U.S. National Strategy for the Arctic Region. It is  
14 going to provide input to and inform the Department's  
15 undertaking of its Quadrennial Energy Review, which  
16 is also going to be dealing with technology element  
17 as well.

18           And its' going to provide some context we  
19 think that will be important to the United States,  
20 assuming the Chair of the multi-nation Arctic  
21 Council, which begins in 2015, that chairmanship.

22           We are on target complete the Arctic

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1 study. We committed to the Secretary that we would  
2 deliver this to him no later than the end of the  
3 first quarter 2015, in order that it could be used to  
4 address and inform those areas that I just  
5 highlighted to you.

6 And in fact, I also committed to the  
7 Secretary I'd give him some headlines of the study  
8 early in the year, and, if course, he's going to see  
9 some of that today.

10 So in undertaking the study to address  
11 those questions, we've segmented into two portions in  
12 terms of scope. First is a prudent development  
13 section and the second then gets to the research and  
14 technology areas themselves.

15 And we think it's important in the prudent  
16 development section, which is really going to be  
17 contained in the first chapter is to provide a  
18 landscape, you know, try to put a picture on the wall  
19 of what we already know so that there is some context  
20 for the remaining part of the research areas -- did  
21 we lose sound? Okay, where is the techies?

22 (Laughter.)

1 MR. TILLERSON: The techie gurus, see if  
2 we can get ourselves back up here. You all can  
3 probably hear me but I'm not sure people on the  
4 webcast will be able to hear. Is this one live? Here  
5 we go. So it's just a bad microphone. Boy that was  
6 easy. Secretary is good, isn't he?

7 (Laughter.)

8 HONORABLE MONIZ: I had some help.

9 MR. TILLERSON: Technology wizard, we  
10 never knew it. Okay, so -- oh MIT, I should -- of  
11 course.

12 (Laughter.)

13 MR. TILLERSON: It's the "T." the Prudent  
14 Development part of the study that which will be  
15 contained in the first chapter as I indicated is  
16 really to provide some context for the rest of the  
17 study.

18 And in that portion of the study, we want  
19 to provide some history of what we already have  
20 accomplished in the Arctic region. The industry has  
21 a long history of almost a century of working in the  
22 Arctic, so we want to provide some context of what

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1 has already been demonstrated that is doable and  
2 capable of being done in the Arctic.

3 We do want to provide context by giving a  
4 resource assessment so there is an understanding of  
5 what is the prize, what's at stake here, in terms of  
6 the oil and gas resources, both in conventional,  
7 onshore, offshore, and unconventional.

8 And then we want to also, looking at that  
9 history, provide some understanding of how do you go  
10 about developing in the Arctic? What are the  
11 sequence of steps that have to be taken to achieve a  
12 commercial development in the Arctic, and then what  
13 are some of the challenges, obviously, in terms of  
14 economics challenges, regulatory challenges. Skills  
15 sets, both human skill sets and technology skill  
16 sets.

17 And then what has been the role of  
18 government, what is the role of government both here  
19 in the U.S. and the importance of international  
20 collaborations, because Arctic development is going  
21 on obviously in other nations around the world.

22 So the report outline on the right

1 basically touches on those areas in terms of how we  
2 would go about that.

3           The Research and Technology Scope is then  
4 subsetting into six chapters, and this is really the  
5 major part of the work. There are four research and  
6 technology areas shown. First is Characterizing and  
7 measuring ice environment.

8           And again, what you're going to see, and  
9 Carol is going to show you a little bit in greater  
10 depth, we want to ensure people understand the Arctic  
11 is not an homogenous environment, it has a great deal  
12 of variety to it. And therefore technology  
13 approaches and challenges to a prudent development of  
14 the Arctic are variable depending on the types of  
15 environments you're dealing with.

16           We want to delve into offshore exploration  
17 and production technologies, of what do we know how  
18 to do, what are the extensions of technologies that  
19 are needed and looking beyond that, what are the  
20 visions of things that will be required for us to be  
21 able to continue to develop in the Arctic.

22           A big portion of the challenges in the

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1 Arctic, obviously, are logistics and infrastructure.  
2 Not just that -- not just the logistics, the  
3 infrastructure directly related to Arctic  
4 development, but the fact that the Arctic is an area  
5 that is going to be used by a lot of commercial and  
6 military activities as well. How do you coordinate  
7 all of those?

8           And then finally, oil spill prevention,  
9 control and response, critical aspect of being able  
10 to prudently develop in the Arctic.

11           Then two areas of research that deal with  
12 the ecology and the human environment, and what  
13 activities need to be undertaken to establish very  
14 sound baselines. One of the issues as we deal with  
15 these subjects that are important to everyone, is  
16 that often times we are opining without good basic  
17 data.

18           There are a lot of views around the  
19 ecological environment, around the human environment.  
20 What activities could we understand to help us better  
21 understand where we actually started from. What are  
22 the baselines, so then we can measure what impacts

1 Arctic development may have going forward.

2 So that gives us some real opportunities  
3 in this area and the study will address those.

4 So how we're going about this -- okay,  
5 maybe somebody can advance the slide, there we go --  
6 so the study as organized, shown by this chart,  
7 obviously I chair the Study Steering Committee which  
8 reports to the you, the Council.

9 Carol Lloyd, who will come up in a second,  
10 chairs the Coordinating Subcommittee, and then you  
11 see the three areas that I just covered in terms of  
12 scope. So we have a Prudent Development Working  
13 Group, we have a Research and Technology Working  
14 Group for the Technical and Operational aspect for  
15 the Arctic Development, and then we have the Research  
16 and Technology Group dealing with the Ecological and  
17 Human Environment.

18 And then you see the boxes dropping down  
19 below that where we then have subject matter experts  
20 working in each of these areas. So we've gone one  
21 slide too far, but that's okay because this is where  
22 we have arrived.

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1           Now I did want to point out -- and you see  
2 it footnoted at the bottom of this slide. We have  
3 elected to confine the study to dealing with  
4 conventional resources.

5           Now, we're going to size the  
6 unconventional resources, but what we believe is of  
7 greatest interest is going to be the development of  
8 the large conventional resource opportunities that  
9 exist in the Arctic, and many of the technology and  
10 human and environmental factors do overlap when you  
11 begin to consider unconventional development.

12           But we feel that the most urgent areas of  
13 understanding are really in the conventional resource  
14 areas, so most of this study is directed at  
15 conventional resources. So I'm going to stop at that  
16 point. I'm going to ask Carol Lloyd to come up, who  
17 is chairing the Coordinating Subcommittee.

18           Carol is the Vice President at Exxon  
19 Mobile Upstream Research Company in Houston/The  
20 Woodlands, and Carol is going to take you a little  
21 deeper into the study and then we'll both double team  
22 to take any questions you have on that.



1 MS. LLOYD: Thank you Rex. Good morning  
2 everyone. In the remaining time on the Arctic I'm  
3 going to do three things: I'll talk to you about the  
4 team that we brought to bear to explore the  
5 Secretary's question. I will give you a preview of  
6 some of the key findings and dabble in a little bit  
7 of detail on that, and then I'll conclude with four  
8 plans and key dates to meet the target to deliver a  
9 study report to the Secretary at the end of March.

10 So beginning with this slide, our total  
11 study participation is shown, beginning with our  
12 Study Committee, we have members -- council members  
13 from 31 organizations represented, and on the slide  
14 you can see the make-up of those members in terms of  
15 industry, non-industry, and government.

16 As noted on Rex's slide, to provide more  
17 hands-on and direct leadership to the Coordinating  
18 Subcommittee, we've established a Steering Committee  
19 of 9 of those members, and we've been meeting with  
20 them in the course of progressing the study and  
21 taking their guidance and counsel as we've conducted  
22 our work.

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1           The Coordinating Subcommittee is staffed  
2 with participants from 22 organizations as noted in  
3 the sub-point, they're roughly evenly split between  
4 industry and non-industry and government  
5 representatives.

6           The Prudent Development team is led by  
7 Chevron, a fellow by the name of Bill Scott, who has  
8 over 30 years of experience in the Arctic and Bill's  
9 team is made up of 40 members from companies and  
10 government.

11           Technology and Operations is led by Exxon  
12 Mobile. Jed Hamilton is leading that team. He is  
13 Exxon Mobile's senior most Arctic professional with  
14 over 30 years of experience. And on Jed's team, he's  
15 got 114 members from 40 companies, government, and  
16 academia.

17           And then finally, the Ecology and Human  
18 Environment is led by Shell. He has 24 team members  
19 from 14 different companies, government, and  
20 academia.

21           The total study demographics are shown on  
22 the bottom right. In total we have 162 members from

1 31 organizations. You can see that just over half  
2 are from industry, roughly 20% from the federal  
3 government, and then participation from the state  
4 governments, NGO organizations, consultants, Alaska  
5 natives, and academia.

6 In total, the membership of the study that  
7 we're progressing represents a broad cross section of  
8 interest and significant skill set in terms of Arctic  
9 experience. So very, very pleased with the total  
10 team that we've assembled to progress the work.

11 The next slide, if I could just get you to  
12 advance them -- the next slide talks about our  
13 efforts to reach out beyond the teams and in the  
14 first bullet it's described two technology workshops  
15 that were held with government, academia, and  
16 Alaskan natives.

17 The objectives of these workshops were to  
18 brief the participants of the workshop on what we  
19 were doing on this study, and also to provide input  
20 to the study members so that we could form our  
21 recommendations on future R&D opportunities.

22 In order to make recommendations on future

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1 R&D opportunities, we needed to understand the full  
2 scope of research that was already being conducted  
3 and indeed that is substantive.

4           The first workshop is detailed in the  
5 second sub-point. It was a Federal workshop held in  
6 September at Resources for the Future. It was  
7 attended by 56 participants, including 32 from  
8 government research organizations.

9           And as an aside, many of these  
10 participants were unaware of research that was being  
11 conducted by their colleagues in areas that were  
12 directly related to their own work.

13           So the participants in the workshop gained  
14 significant value in terms of understanding what  
15 others are doing in this space, and also making  
16 contacts to further progress their work.

17           A key finding from the Washington workshop  
18 is detailed in the second bullet. The workshop  
19 reinforced the need for collaborative studies and  
20 research. Because there are areas where the industry  
21 views the technology that's being developed that is  
22 proven, that regulatory and stakeholder acceptance

1 requires additional work. This specific area is in  
2 technology for well secure and oil spill response.  
3 And these will be recommendations that will be  
4 forthcoming in the study report.

5           Some specific opportunities that were  
6 discussed in the work shop are shown in the third  
7 bullet. These opportunities include a study on the  
8 Quantitative Risk and benefits of different options  
9 for well secure, equivalency options that consider  
10 options to the requirement for a same-season relief  
11 well.

12           Discussion on the need for field  
13 demonstrations of options for oil spill response in  
14 ice, remote sensing technology for tracking spilled  
15 oil and species with a focus on the interaction of  
16 those species for oil and gas activities.

17           And then finally, the use of satellite  
18 measurements to measure ice thickness in support of  
19 ice management and operations.

20           We held a second Alaska workshop in  
21 November at the University of Alaska, Fairbanks and  
22 this workshop was attended by 56 participants,

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1 including 42 Alaska-based participants.

2 Key conclusions from the workshop were  
3 similar in terms of the technology priorities that  
4 I've just outlined, and as importantly, this workshop  
5 provided the study participants with the local  
6 perspective and it provided the local residents with  
7 a little bit more insight in terms of the study's  
8 focus and what we were intending to do.

9 In addition to these two workshops, we  
10 also held briefings with other interested parties.  
11 We held 21 of those briefings. Those were largely  
12 held in Washington, but not exclusively, and they  
13 were held with interested parties that had something  
14 to share with us with regard to their concerns  
15 regarding our scope.

16 In those briefings we provided an outline  
17 similar to the chart that Mr. Tillerson just reviewed  
18 with you and helped them to understand what our study  
19 scope and schedule and focus was going to be.

20 So in all, very, very pleased with the  
21 team and also with the external activities in terms  
22 of providing input and data to inform the study.

1 I'm going to move now to discussing the  
2 key findings in the report. This slide has six  
3 bullets on it and these bullets represent the key  
4 findings. They're also, you can think of as an  
5 outline for the Executive study which we're currently  
6 working on. And I'll walk through each of them and  
7 give you a little more color commentary on these  
8 points.

9 In the first point there is significant  
10 global Arctic oil and gas resource potential and it  
11 can contribute significantly to meeting the world's  
12 energy needs.

13 We use the U.S. Geologic Survey estimates  
14 of Arctic potential and they estimate that there is  
15 over 500 billion barrels of oil equivalent of  
16 potential and about 80% of that are just over 400  
17 billion of potential is undiscovered.

18 This undiscovered potential represents 25%  
19 of the world's remaining undiscovered conventional  
20 oil and gas potential. So indeed, a significant  
21 prize.

22 In terms of distribution by county, Russia

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1 has by far the largest, at nearly half of the  
2 potential, at nearly 300 billion barrels of oil  
3 equivalent and the U.S. is the next largest, holding  
4 about 100 billion barrels of oil equivalent of  
5 potential.

6           Considering oil resources, the Arctic is  
7 assessed by the USGS to have about 100 billion  
8 barrels and the U.S. holds roughly half of this  
9 potential.

10           And given the long timelines and the  
11 significant portion of the prize that's assessed to  
12 be undiscovered, exploration is needed now to enable  
13 production and development of these resources in the  
14 2030s and beyond.

15           Secondly, regarding the physical  
16 environment, Rex alluded to this in his comments --  
17 the presence of ice presents some unique challenges  
18 in the Arctic relative to other production areas and  
19 I'll build on this more in a moment in the next  
20 slide.

21           Thirdly, the petroleum industry has a long  
22 history of successful operations in the Arctic.



1 Beginning with exploration drilling in the U.S. and  
2 Canadian Beaufort Sea in the 60's through the 80's,  
3 there have been roughly 75 exploration wells drilled  
4 in the Beaufort Sea.

5           The first onshore development in  
6 Arctic-like conditions was in 1920s in Canada and  
7 Normal Wells. We have the Cook Inlet Development  
8 beginning in the 60's and 70's, the Trans-Atlantic  
9 Pipeline -- Trans-Alaska Pipeline, and then, of  
10 course, the recent developments in Russia in the  
11 2000s and beyond.

12           This long history of successful operations  
13 in the Arctic has been enabled by continuous  
14 technology advances and continuous learning through  
15 operations, and this would be expected to continue.

16           Fourthly, this is a key conclusion -- most  
17 of the U.S. Arctic offshore conventional oil  
18 potential is in less than 100 meters of water, which  
19 can be developed using existing field-proven  
20 technology, which has been brought to bear in other  
21 jurisdictions, and I'll say more about this two  
22 slides from now.

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1                   Fifthly, we recognize that the ability to  
2 technically develop these resources is only one  
3 element that will be needed in order for us to  
4 realize the benefits of this potential and another  
5 element is securing public confidence and  
6 incorporating local knowledge in our development  
7 plans.

8                   And industry and government share the  
9 responsibility for securing public confidence and we  
10 will build out recommendations in that regard in the  
11 report.

12                   And then finally, as Mr. Tillerson  
13 mentioned, the prevention and mitigation of the well  
14 spills is the top issue on the minds of many  
15 stakeholders, industry, governments, and local  
16 residents, and there have been substantial recent  
17 technology and regulatory advancements that reduce  
18 the risk and consequences of a spill.

19                   And some of these technology advancements  
20 cannot yet be applied in the U.S., because they are  
21 not yet accepted by all stakeholders. And again,  
22 this opens up the opportunity for collaborative

1 research, which will be another recommendation in the  
2 report.

3           The next two slides I will give you a  
4 little bit more detail on the physical ice  
5 environment, the physical  
6 Arctic environment.

7           In the first bullet, Mr. Tillerson alluded  
8 to Arctic conditions vary substantially from basis to  
9 basis, from summer to winter. I suppose summer to  
10 winter is pretty obvious.

11           Once you start thinking about ice, those  
12 of us that live in the southern climates -- I live in  
13 Houston -- might think that ice is ice, and in fact,  
14 that is not the case. And I'll direct your  
15 attentions to the pictures at the bottom to really  
16 bring that to light. Beginning with the picture on  
17 the far left, we have a photo of first-year ice with  
18 numerous pressure ridges.

19           This photo was taken off shore of Sakhalin  
20 Island and first year ice reaches a thickness of 1.5  
21 to 2 meters thick in a single season and it enables  
22 you to drive on it, you can do winter operations on

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1 the ice.

2           The second picture is a multi-year ice  
3 ridge in the Canadian Beaufort Sea. These ice ridges  
4 are typically three to five meters thick and they are  
5 formed when the wind compresses first-year ice sheets  
6 up against each other and forms a rubble zone and  
7 they are refrozen. And these again get to be quite  
8 thick. They form the dominant features for  
9 ice-breakers and other operating considerations.

10           In the third picture, we see open water  
11 and obviously Arctic-like conditions because there is  
12 an iceberg floating there. That photo was taken off  
13 the coast of Eastern Canada. The amount of open  
14 water season is a key consideration in exploration  
15 and development because if you have a significant  
16 amount of open water season, you can conduct  
17 exploration drilling using technology for from  
18 temperate climates -- traditionally technology that's  
19 proven.

20           And then finally, the picture on the far  
21 right is a 6 kilometer ice island that's embedded in  
22 first-year ice and that photo was taken in the Arctic

1 ocean north of the Canadian Archipelago and in this  
2 case the ice island is drifting west towards the  
3 Beaufort Sea.

4           So I hope from looking at these photos you  
5 get a sense of the variability of the Arctic  
6 conditions across the world. And that led us and the  
7 study team to consider how we might better  
8 characterize and explain this environment in a way  
9 that was easy to understand and we came up with the  
10 depiction on the other slide.

11           So there is a lot of data on this slide  
12 but we're pretty proud of this product. The industry  
13 members that were participating on the coordinating  
14 subcommittee each had different terms that we were  
15 using to describe the physical environment and we  
16 collaborated to come up with this system.

17           And what it describes is five tiers of  
18 physical environments that are found in the global  
19 Arctic, and each row on the slide represents a  
20 different technology challenge for exploration and  
21 development.

22           And Tier 1 can be thought of as the

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1 easiest and Tier 5 can be thought of as the hardest,  
2 as depicted in the arrow on the left.

3           The first two columns describe the  
4 physical ice environment and water depth and amount  
5 of open season as I described with the pictures on  
6 the previous slide. The first column is a  
7 description, the second column is an example, where  
8 around the world that region -- those typical ice  
9 conditions could be found.

10           The third column describes the  
11 implications for exploration and development in terms  
12 of the technology needed to develop a resource that's  
13 locate in such a physical environment.

14           You'll notice immediately that in the  
15 first three Tiers there are photos and in Tier 4 and  
16 5 there are not. That's because Tier 1, 2, and 3  
17 have been demonstrated globally and Tier 4 and 5 have  
18 not been demonstrated -- well at least not yet.

19           The next thing you'll notice, if you scan  
20 down the examples column is that the U.S. Beaufort  
21 and Chukchi Seas are contained entirely in Tier 2 and  
22 Tier 3. And indeed 90% of the U.S. potential of the

1 100 million barrels that I talked about is in U.S.  
2 Chukchi and Beaufort Seas in water depths of less  
3 than 100 meters, which is developable with proven  
4 technology.

5 A final general comment, and then I'll  
6 give you a quick tour through the photos, is that in  
7 Tier 4 and 5, although we say any water depth,  
8 greater or less than 100 meters is key and less than  
9 100 meters we can pursue a development supported by a  
10 gravity-based structure such as been used at Sakhalin  
11 Island and in greater than 100 meter development that  
12 requires subsea technology and extensions are  
13 required.

14 And then finally, in Tier 5 where we speak  
15 of limited to no open water, this represents a  
16 particular challenge because without a significant  
17 open water season it's very difficult to mobilize  
18 equipment to location. And again, technology  
19 extensions will be required.

20 Quick cruise through the photos on the  
21 right. In Tier 1, we have typically ice free in any  
22 water depth and the examples shown are the Snohvit

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1 Subsea development in Norway, which represents the  
2 first Arctic subsea development. It's 140 kilometers  
3 from shore in roughly 300 meters of water depth and  
4 it started up in 2007.

5 And then the Hibernia Gravity Base  
6 Structure, Hibernia discovered in 1979 in 80 meters  
7 of water and is developed by GBS with ice resistant  
8 platforms and an ice management system to detect and  
9 divert icebergs away from the platform.

10 In Tier 2, we see photos of Spray Ice  
11 Islands that were used in the Canadian and U.S.  
12 Beaufort in the near shore and shallow water, and  
13 that particular picture was taken in the mid-70s, 3  
14 kilometers offshore in 3 meters of water.

15 And then we see a photo of the Northstar  
16 development 6 kilometers northwest of Prudhoe Bay in  
17 14 meters of water. It started up in 1985.

18 Moving down to Tier 3, we see a picture of  
19 the Canmar Explorer II, a Drillship which was used to  
20 explore in the Canadian Beaufort in the 1980s in  
21 water depths up to 500 meters.

22 And then finally, we see a picture of the



1 Sakhalin-II GBS, which is a development platform off  
2 the coast of Sakhalin Island 16 kilometers offshore  
3 in 50 meters of water.

4 The Sakhalin Fields were discovered in the  
5 1980s and started up in 2009, and gas from this  
6 development feeds an LNG plant and is exported.

7 That's all the comments I have on this  
8 slide and it will be developed and explained in great  
9 detail in the report.

10 My last slide then highlights the key  
11 dates as we are moving forward. We are very pleased  
12 with the team and progress we're making. I hope you  
13 will see similarly from the materials that I've  
14 shared with you today.

15 We are on track to complete the study and  
16 deliver the report to the Secretary by the end of  
17 March. Currently, the Coordinating Subcommittee and  
18 the Task Teams that I showed you are working hard on  
19 revision three or four of their chapters and the  
20 executive summary.

21 And then after the new year, we will begin  
22 our reviews in the latter part of January and early

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1 February with the Steering Committee and then  
2 beginning in mid-February with the Study Committee  
3 and then culminating at the end of March with the  
4 review.

5 We look forward to the bills and guidance  
6 from our leaders as we go through these reviews.  
7 That concludes my remarks.

8 MR. TILLERSON: Thanks Carol. If you'll  
9 just stay where you are. Questions? We welcome any  
10 questions anyone has.

11 (No response.)

12 MR. TILLERSON: If not Carol did a great  
13 job. Thank you. Thanks for all your support.

14 MS. LLOYD: Thank you.

15 (Applause.)

16 MR. DAVIDSON: Thank you Rex and Carol.  
17 It's obvious just in this quick summary that we've  
18 received, that this is a very extensive study and is  
19 going to really pay great benefits as we consider and  
20 continue to explore and develop in the Arctic.

21 So, again, thanks. The teams have really  
22 made some great progress. Rex mentioned that the

1 commitment to have a report by the end of the first  
2 quarter so as a heads up to the Council membership  
3 that we're working with the Secretary and his staff  
4 right now and you might want to pencil in Friday,  
5 March 27 on your calendars. That's the tentative  
6 date for when we would anticipate presenting that  
7 report back to the Council membership. So thanks  
8 again. Great job.

9 Our next business item, which is an action  
10 item, is to review the work of the NPC Committee on  
11 Emergency Preparedness, discuss their findings and  
12 recommendations and to vote on their proposed final  
13 report as the Council's response to the Secretary's  
14 request on this item.

15 Again, you'll see, and I know many of you  
16 have reviewed, also many of you have been a part of  
17 this study. Again it's another very extensive study  
18 and many of you have provided a lot of outstanding  
19 leadership, as well as a lot of commitments of your  
20 personal time, as well as resources of the  
21 organization to bring this report forward.

22 It is an important issue as we look at how

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1 we can better, in a coordinated fashion, respond to  
2 emergencies that impact our energy infrastructure in  
3 this country. Marvin Odum chairs our Committee on  
4 Emergency Preparedness and he is going to kick off  
5 the presentation that results in this comprehensive  
6 study. So I'll turn it over to you Marvin.

7 MR. ODUM: Thank you Chuck. Good morning  
8 everyone. While I have a slightly more formal part  
9 of the meeting today. So with that I'd like to  
10 formally bring the NPC study on Emergency  
11 Preparedness to the Council for their consideration  
12 and, of course, their approval.

13 Now before we get to the details of the  
14 study I want to recognize the work that's been done  
15 by the study team and, in particular, the  
16 collaborations and support provided by the Department  
17 of Energy participants.

18 It's clear to the NPC study team that this  
19 subject has been given a very high priority within  
20 the DOE and significant resources are being dedicated  
21 to emergency preparedness.

22 I want to also recognize the other members

1 of the Executive Committee for the precious time and  
2 energy that they committed to this study. That's  
3 Alan Armstrong of Williams, Gary Heminger of Marathon  
4 Petroleum, Jim Hackett, Chair of the NPC, of course,  
5 Chuck Davidson, Vice Chair of NPC, and Bill White,  
6 Chairman of Lazard in Houston who certainly brought  
7 his own hard earned experience to our study.

8 Now for the record, the draft report was  
9 provided electronically to all members of the Council  
10 on December 2. The draft report has been reviewed  
11 and supported by the study's Coordinating  
12 Subcommittee, the Executive Committee, and the Study  
13 Committee.

14 Now looking at the recommendations, there  
15 is just a few reflections that I'd like to share  
16 before I hand over to Petty Montana to take you into  
17 some of the details.

18 Now first, this study purposely focused  
19 not on the incident management that happens at the  
20 local level, but on the mechanisms to improve the  
21 management of issues that result from the cascading  
22 effects of significant events.

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1           As we all know, the impacts of a natural  
2 disaster can have far-reaching effects, bringing the  
3 full well-organized and practiced capability of the  
4 federal, state, and industry resources to assist, can  
5 greatly improve the effectiveness and the speed of  
6 the recovery.

7           Therefore, this study focused on improving  
8 the communication and the coordination between the  
9 industry and government at the federal and state  
10 levels, which in turn will enable better support at  
11 the local level

12           Now second, the recommendations are not  
13 particularly groundbreaking. So why is that? I  
14 think it was telling that in the review of preview  
15 incidents and other studies that have taken place on  
16 this topic, repeatedly they had very similar  
17 findings, and some of those show up yet again in this  
18 study.

19           Now basic emergency response techniques  
20 and approaches are a well-understood science.  
21 However, it's often the human and organizational  
22 dynamics that can make emergency response go well or

1 not.

2           Therefore, a key feature of the study's  
3 recommendations is a focus on putting together a  
4 sustainable platform which, if implemented well, can  
5 withstand changes in administration, in personnel,  
6 and, of course, industry dynamics.

7           As Chuck Davidson noted in our last Study  
8 Committee meeting, the answer here is in the  
9 implementation. We know the scenarios and the  
10 players will be different each time and it is our  
11 emphasis and our emphasis, of course, is on what we  
12 do as an industry, together with the government, and  
13 after this report comes out, that's going to make the  
14 major difference.

15           Now the recommendations provide us a  
16 starting point, or what I like to call the structure  
17 or the backbone, to discover all those things that we  
18 didn't know and that we won't know, until we  
19 implement, practice, learn, and improve.

20           Now the key element here, as so often is  
21 the case, is leadership in both government and  
22 industry to commit to full implementation of the

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1 recommendations.

2           Therefore, it's not only your  
3 understanding and support for the study that I'm  
4 asking for today, but your individual and your  
5 organizations' commitment to implement these  
6 recommendations.

7           To that end, the last item in the report  
8 out that you will see today will be an outline of the  
9 proposed implementation plan. So with that I'd like  
10 to hand over to Petty Montana who will take you  
11 through some of the details of the study. Petty is  
12 the CEO of our newly formed Midstream MLP, amongst  
13 many other things at Shell. Peggy.

14           MS. MONTANA: Thanks Marvin. So let me go  
15 ahead and start with the Secretary's request. The  
16 Secretary asked that we identify vulnerabilities in  
17 the U.S. infrastructure revealed by recent storm  
18 events; legal, procedural, and physical gaps that  
19 need to be addressed to improve the response;  
20 strategies to increase energy system resilience; and  
21 actions to address interdependencies.

22           With that request, we then developed the



1 scope of the study. The scope was approved by the  
2 NPC in January of this year. The study was focused  
3 on significant disruptions from natural disasters,  
4 such as hurricanes, earthquakes, and floods.

5 We did exclude disruptions caused by  
6 sabotage or cyber attacks. In addition hardening of  
7 assets was explicitly excluded from the scope of this  
8 report.

9 The DOE topic of interest were then  
10 categorized into three study areas. These study  
11 areas focused on identifying what's needed by  
12 government and industry to improve interactions to  
13 prepare and respond to emergencies, with particular  
14 attention to putting in place an institutional  
15 framework.

16 As well, data technology and other  
17 capabilities that are pivotal to the response effort  
18 in order to assess damage and then support informed  
19 decision-making.

20 And legal, procedural, or physical  
21 challenges that need to be addressed to improve  
22 response, particularly those around waivers.

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1           To address this scope, the organizational  
2 structure was formed. We put together four subgroups  
3 to support the coordinating subcommittee, analysis  
4 and planning, communication and information  
5 management, oil and natural gas supply chains, and  
6 legal and regulatory.

7           Each of these subgroups worked very hard  
8 to ensure that the study areas were well covered.

9           And my sincere thanks to Paula Gant, my  
10 Co-Chair and the leaders of these groups,  
11 specifically Keith Robson from Marathon, Bill Larsen  
12 from Williams, Robin Rork from the APA, and Ian Mares  
13 from Resources for the Future.

14           Special thanks also goes to the Analysis  
15 and Planning Subgroup, members from Exxon Mobile,  
16 Shell, and Kinder-Morgan, as well as the DOE, who  
17 were instrumental in driving and utilizing their  
18 leadership to deliver the study.

19           In terms of the study approach, there were  
20 two main components. The first was a thorough review  
21 of the after action reports and key studies that have  
22 been done in this area. And we use a nomenclature

1 after action in the report, but it simply means a  
2 formal report of an incident after the fact to review  
3 what happened and to make recommendations for  
4 improvement.

5 The consolidation of the findings and  
6 recommendations from looking at the after action  
7 reports and the key studies, highlighted very common  
8 themes and repetitive recommendations.

9 This process really helped us to recognize  
10 that it's really about implementation rather than  
11 identifying new and different things that need to be  
12 done.

13 The second component was a series of  
14 engagement sessions to get the benefit of the  
15 experience and the knowledge that was out there from  
16 the people who had been through these events. These  
17 sessions included multiple levels of government:  
18 local, state, and federal, as well as a broad  
19 spectrum of industry and other stakeholders.

20 As you can see here, we had representation  
21 from 8 Cabinet Agencies, and the state governments  
22 were well represented as well.

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1                   We also had very good participation from  
2 the utilities at both the engagement sessions and  
3 within the Coordinating Subcommittee, and their  
4 participation was particularly helpful, particularly  
5 in address interdependencies. So I thank them for  
6 their inputs.

7                   In addition to the larger representation  
8 from the oil and gas industry, we also had very good  
9 participation from other CSC members, which included  
10 academia as well.

11                   And then unique to this study, we also  
12 engaged with the Oil and Natural Sector Coordinating  
13 Council what I'll call in the rest of the report  
14 ONGSCC.

15                   I have to tell you that for myself and for  
16 most members of the Coordinating Subcommittee, we  
17 were not aware of this organization before this  
18 study. But, in fact, it's a group that was  
19 established in 2004 and the current membership of the  
20 ONGSCC is 23 trade associations.

21                   And it is a focal point organization, to  
22 address security strategies, policies, and

1 communication between the DHS, the DOE, and industry.  
2 And this group was established primarily for security  
3 but it also provides a mean to improve some  
4 preparedness and communication processes.

5           Fortunately for this study, Keith Robson  
6 is not only a member of the Coordinating Subcommittee  
7 and leading one of the subgroups, he also happens to  
8 be the current Chair of the Oil and Natural Gas  
9 Coordinating Council, so we chose well. But his  
10 participation has been invaluable in terms of linking  
11 the efforts of that group with the recommendations of  
12 this report.

13           So let me move to the findings. The  
14 findings were developed on the basis of the review of  
15 the after action report, the outputs from the  
16 engagement sessions, and the work of the subgroups,  
17 and a number of reoccurring issues and challenges  
18 were identified.

19           We saw first that an understanding of the  
20 oil and natural gas supply chains were critical. As  
21 an example, when a gulf coast hurricane can hit, the  
22 fact that it can have immediate impact on other areas

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1 such as Georgia and Baltimore, needs to be understood  
2 by others that are dealing with the industry.

3 And people engaging with the industry did  
4 not understand that terminal and pipeline operators  
5 could not assist with allocation of supply because  
6 they did not own the product themselves. So that  
7 created that lack of knowledge, created the  
8 frustration in terms of trying to deal with the  
9 response.

10 So clearly knowledge of how the industry  
11 works and the implications of supply chains are  
12 helpful when dealing with an emergency situation.

13 Another key finding is around situational  
14 awareness and improvements of that. Communication  
15 channels were unclear during events. And critical  
16 agencies, like the EIA, which have a fundamental role  
17 in gathering information for situational awareness,  
18 were sometimes hampered on timing by the limits  
19 imposed on such things as the Paperwork Reduction  
20 Act.

21 Effective communications was also a  
22 challenge during events, in fact, in part to the

1 segmentation of the industry. As we all know, due to  
2 the evolution of the industry, there are now a very  
3 wide variety of owners across the supply chain, and  
4 that makes it difficult to have a small number of  
5 entry points to the industry from the DOE and state  
6 governments.

7 In addition, sustainability is key. There  
8 is a larger turnover of staff both within industry  
9 and governments and there is a relative infrequency  
10 of these events. So without a sustained process,  
11 institutional knowledge and capability will be lost.

12 And lastly, as Marvin talked about,  
13 leadership commitment to driving that sustainability  
14 and ensuring the resources and budgets to make this  
15 happen is critical, both from an industry  
16 perspective, and from the government. So these  
17 findings formed the basis of our recommendations.

18 And based on these findings, it was clear  
19 that there was a need for DOE and industry to  
20 institutionalize a system to foster continuous  
21 improvement.

22 So let me now go to the study

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1 recommendations and as you will see in the  
2 recommendations, this report drives action, it does  
3 not conclude action.

4           These recommendations set the foundation  
5 for building a sustainable process with continuous  
6 improvement. These recommendations are aligned with  
7 proven strategies to increase energy system  
8 resilience to storms and other potential disruptions  
9 by enhancing preparedness and response and speeding  
10 recovery.

11           The recommendations fall into two  
12 categories. The first focuses on establishing the  
13 operational frameworks that are appropriately staffed  
14 and resources and the second focuses on sustaining  
15 the process.

16           The following slides will look at the  
17 study's recommendations in a bit more depth. The  
18 first three recommendations lay the foundation for  
19 use of a common system. The national response  
20 framework provides the framework for how the nation  
21 should respond to all types of disasters and  
22 emergencies.



1           The National Incident Management System or  
2 NIMS provides a comprehensive national approach to  
3 incident management. And one of the most important  
4 elements incorporated into NIMS is the Incident  
5 Command Structure, or ICS, a standard on scene, all  
6 hazard incident management system.

7           The ICS has been adopted by NIMS as the  
8 standard incident organizational structure and it's  
9 been demonstrated to be effective in managing supply  
10 chain disruption regardless of the cause, scale,  
11 location, or complexity.

12           So the first recommendation is around  
13 harmonizing DOE's energy response team structure with  
14 that NIMS Incident Command System, which will improve  
15 communication between agencies and with the private  
16 sector.

17           ICS will work for small events as well as  
18 Stafford Act events. And this recommendation is the  
19 cornerstone for all subsequent recommendations.

20           We have seen a lot of work within the DOE  
21 and there is a clear demonstration of speed and  
22 urgency to tackle this.

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1 Under the ICS structure, the situation  
2 unit is responsible for collection, evaluation, and  
3 dissemination of incident information.

4 So during normal events, the EIA is the  
5 primary contact to industry for information. They  
6 know the supply chains, and the Study Team recognize  
7 that their support is extremely valuable during  
8 response efforts, and should be formalized within the  
9 energy response team.

10 The last recommendation that will be  
11 important for use of a common system is the  
12 establishment of company liaisons. This role will be  
13 essential as it will provide a channel for the DOE to  
14 get information from the companies in order to  
15 conduct analysis and develop that situational  
16 awareness.

17 We should not underestimate what it will  
18 take for the industry to put these liaisons in place.  
19 It's important to note that the primary information  
20 exchange should follow the bottom-up approach  
21 designed into the ICS frameworks, which reinforces an  
22 incidence response ultimately occurs at a local

1 level.

2 That being said, we recognize the desire  
3 of the Department of Energy to request leaders of  
4 companies to participate in group emergency meetings,  
5 if needed, and provisions will be made to facilitate  
6 that request in advance of an emergency.

7 This next slide is just a graphic that  
8 shows the national response framework and what you  
9 see here is how these three recommendations fit  
10 within the national response framework, utilizing the  
11 NIMS ICS.

12 So the study is more of a noted by its  
13 nature, focused at the higher level of federal and  
14 state coordination with industry, and that focuses on  
15 issues management that then supports incident  
16 management at the local level.

17 So establishing, harmonizing the DOE  
18 Energy Response Team within that NIMS framework is  
19 recommendation is number one. Establishing EIA as a  
20 formal member and participant under the situation  
21 unit lead and establishing the right contact levels  
22 within industry for the federal and state

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1 governments.

2           Moving on -- when these events have  
3 happened there is a need to quickly restore fuel  
4 supplies and to do this the industry may request  
5 temporary, regulatory relief. That may include use  
6 of fuel supply from other regions, alternate modes of  
7 transport or changing of supply routes.

8           This study recommends use of a template  
9 for use by government and offer some specific  
10 recommendations for improving waiver processes. The  
11 need for temporary regulatory relief is very time  
12 sensitive. The time that it takes to issue a waiver  
13 and the specified duration of the waiver are  
14 important criteria for response.

15           And of key important is the need to match  
16 the regulatory relief timeframe with the supply chain  
17 response time.

18           Regulatory relief often comes when the  
19 impact is already seen in the city or state, even  
20 though it can be seen or predicted four or five days  
21 out that regulatory relief will be needed.

22           As an example again, a Gulf Coast

1 hurricane affecting main pipelines to the east coast  
2 resulting in supply shortages of the east coast.  
3 When those events happen, we can predict that supply  
4 shortages will occur out in time and regulatory  
5 relief is needed in a more certain timeframe rather  
6 than waiting for that impact to be felt before the  
7 regulatory relief is given.

8 Certainly regarding the regulations being  
9 waived and the extent of the waiver are also  
10 important. Uncertainty sometimes results in delay  
11 and missed opportunities.

12 Moving to the recommendations that support  
13 sustaining the process, we recognize that energy  
14 assurance plans are the mechanisms for states and  
15 localities to plan for and respond to incidents  
16 involving the energy sector.

17 State energy assurance plans and the  
18 industry business continuity plans need to address  
19 vulnerabilities and interdependencies. It's  
20 imperative that these programs be staffed and  
21 resourced in order to achieve a robust program at the  
22 local and state levels.

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1                   And as with the other recommendations in  
2 this category, this will require leadership  
3 commitment.

4                   Continuing with the recommendations for  
5 ongoing actions required for sustainability, we are  
6 recommending that the DOE and states establish  
7 routine education and training programs and improve  
8 their comprehensive drill and exercise programs.

9                   There is a key role for industry in  
10 support of both these recommendations. First, the  
11 industry will enhance and maintain the Oil and  
12 Natural Gas Industry Preparedness Handbook that we  
13 would recommend the government use as a key  
14 reference.

15                   Second, the industry is committed to  
16 inviting DOE to participate in industry-led drills  
17 and exercises and participating in DOE-led drills.

18                   There are further details of cooperation  
19 between the industry and DOE included in the  
20 implementation plan, so let me now go to that.

21                   As I stated earlier, implementing the  
22 study recommendations will build upon the progress

1 already underway in advancing DOE's emergency  
2 response capability.

3           The government and industry share a  
4 commitment to prepare for and respond to energy  
5 supply disruptions and that shared commitment is  
6 reflected in the implementation plan shown here.

7           The NPC and DOE leadership anticipate that  
8 the recommendations will start to be implemented in  
9 advance of the 2015 hurricane season, and there are  
10 plans to conduct a joint exercise in 2015 to test key  
11 recommendations of the study.

12           So we are working to staff a group that  
13 will work with the DOE to continue to address the  
14 implementation plan and I would now like to just ask  
15 Keith Robson to say a few words about request that  
16 will be coming to you as members of the NPC and  
17 request to the trade associations for staff resources  
18 to support some of this work. Keith.

19           MR. ROBSON: Appreciate the intro Peggy.  
20 I was really happy to hear Marvin's comments early on  
21 about support and participation. You know, it's been  
22 moved forward and those of us in the Study Committee

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1 have said that the easy work is done, now the hard  
2 work begins. Quite frankly implementation plan is  
3 what it's all. I think there is going to be plenty  
4 of work to go around.

5           As I sat to look through the  
6 implementation plan I really see, at this point I see  
7 three key areas, the three areas of expertise I think  
8 that we're probably going to need some additional  
9 resources and support to work through the  
10 implementation plan.

11           For many of those there are probably  
12 people with some crisis management expertise. I  
13 think probably some people with supply chain  
14 expertise and probably maybe even some public affairs  
15 folks. Those are some of the resources I see that  
16 we're looking for right now to go forward.

17           I think a legal would be one thing, people  
18 would think maybe we need, but I think we have some  
19 legal support that's probably adequate. I think that  
20 as we go forward, I see really two modes I think that  
21 we're looking for. One would be in the ONGSCC, we  
22 have that emergency management working group, we may



1 take some additional resources to provide in that  
2 working group and establish a working group  
3 underneath that. we'll see how that works.

4           And I think there is going to be a role,  
5 what I call on a ad hoc basis if you will, something  
6 in the education and training opportunities as  
7 they're going to come up, I'm not sure there is a  
8 need to establish a real working group for that, have  
9 people available at request, obviously with enough  
10 prior notice to do that, but participate in those  
11 kinds of operations.

12           I think that's where we're going to go  
13 with the thing. I guess, you know, our request here  
14 is if you have people in those skill sets that you're  
15 willing to offer up to participate with us moving  
16 forward, I think we can probably -- if you get those  
17 names to Marshall Nichols, I think give them to  
18 Marshall, Marshall will give them to us and we can  
19 start to develop those resources and skill where we  
20 need those available. So I think that's it Peggy.

21           MS. MONTANA: So anyway, we'll be -- we're  
22 looking for those resources, please give the names to

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1 Marshall and if we don't get enough we'll come tap  
2 people on some shoulders. So with that Morgan,  
3 that's the study report and recommendations. I'll  
4 turn this over to you.

5 MR. ODUM: Thank you Peggy, and to the  
6 entire team for really a terrific job. I wonder, Mr.  
7 Chair, should we just pause here and see if there are  
8 any comments or questions.

9 MR. DAVIDSON: Yeah, I'd like to open it  
10 up for questions but first Marvin moved that the NPC  
11 approve this so if I can have a second, then we'll  
12 open it up for Q&A. Got a second, okay. I'll turn  
13 it over to you for some questions and comments.

14 MR. AMORY LOVINS: Thank you. I'd like to  
15 suggest two ways to strengthen this very useful  
16 report goals by harnessing interactions across its  
17 understandably narrow boundaries.

18 First, as my brittle power synthesis for  
19 DOD noted back in '81, the most bounce per buck comes  
20 from efficient end use. For example, the  
21 uncompromised 125-240 mile per gallon ultra light  
22 autos that were excluded from our transportation

1 study, but have since entered the market, could run  
2 four to eight times longer on their half-full fuel  
3 tanks than these cars can, so if such an efficient  
4 vehicle distributed fuel inventories can buy precious  
5 time for the supply chain to fix what's broken or to  
6 improvise new supplies, similarly efficient builders  
7 and factories can stretch existing natural gas  
8 storage and thus buy time to mitigate supply side  
9 disruptions.

10 So I think we need to bear this missing  
11 time dimension in mind.

12 Second, this report understandably  
13 considers only natural disasters, not malicious  
14 disruption, which could be far more serious. In  
15 Brittle Power we found that a hand full of people  
16 could shut off three-quarters of the oil and gas to  
17 the eastern states in an evening without leaving  
18 Louisiana.

19 I'm most concern about the hydrocarbon  
20 supply chain strong dependence on even more  
21 vulnerable grid electricity, which remains under  
22 threat from physical attacks like Metcalf, cyber

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1 attack and solar storms.

2 About two-thirds of U.S. utilities have  
3 not yet launched a serious response. They're too  
4 busy arguing that somebody else should pay to protect  
5 their customers, their revenues, and their piece of  
6 national security.

7 In the Defense Science Board Panel where  
8 the gravity of the cyber threat emerged in '06, the  
9 Legislator Jim Woodsley both urged, and I agreed,  
10 that decisive DOE or DOD action under the Defense  
11 Production Act would be a good way to fix these grave  
12 deficiencies in power systems with due urgency,  
13 rather than losing another eight years.

14 So making America's power system resilient  
15 would be very much in the interest of the oil and gas  
16 industries and I hope that NPC members will consider  
17 supporting it so our nation's electric  
18 vulnerabilities don't stop them but from producing,  
19 treating, and transporting their own vital products.  
20 Thank you.

21 MR. ODUM: Thanks Amory, and it's not  
22 surprising to me that your comments were really more

1 expansive than we actually covered in the study. I  
2 take your comments seriously. I think from the --  
3 particularly the point of view around, we only  
4 address natural disasters.

5           There is a very strong feeling I think I  
6 can express on behalf of the team that this structure  
7 in getting this backbone in place, of this response  
8 methodology, this communication pass, smoothing that  
9 piece, actually then sets us up for further  
10 improvements in the overall system.

11           But without that in place first, it's very  
12 difficult to make the other improvements. And that's  
13 really the focus of this first important step.

14           I think you've also highlighted a number  
15 of potential improvements to the energy system,  
16 infrastructure and so forth, which again I would see  
17 as later stages and particularly or possibly other  
18 studies from NPC. Peggy, anything you want to add to  
19 that?

20           (No response.)

21           MR. ODUM: Okay. Other comments? Yes  
22 sir.

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1                   PARTICIPANT: Thank you Mr. Chairman for  
2 this helpful report and for your team's report. I  
3 offer a different issue, and that is, would it be  
4 possible for t he study to say something about the  
5 linkage of your results for international  
6 application?

7                   First of all, in the case of North  
8 America, natural disasters are a problem for our  
9 whole community, but more importantly, many of our  
10 closest countries in which we corporate on energy  
11 face similar issues, and what your study has done  
12 should at least mention them, I' wouldn't suggest  
13 enormous work on it, but mention the linkage and the  
14 use it could have to other countries who would look  
15 to us for leadership.

16                  MR. ODUM: Right. Thank you very much,  
17 because there is an obvious interdependence between  
18 some particular countries, of course, I'll take that  
19 on advice. Thank you very much. Yes sir.

20                  MR. HIGHTOWER: Steve Hightower of  
21 Hightower Petroleum, and one of the things that I  
22 notice during the process is at the end of the supply

1 chain is the independent suppliers, the distributors,  
2 and I think that there is that involvement while it  
3 was asked towards the end, I think that we have a lot  
4 of experience as input because we're the boots on the  
5 ground and I think that it would be beneficial to  
6 have our input more in the higher level input and not  
7 being a part of the staff resources, I think would be  
8 helpful in some of the thought process as well.

9 MR. ODUM: Okay. Steve thanks very much  
10 for the comments and I think that's one of the things  
11 we can think about how we would incorporate into this  
12 drill system and start to really get clearer about  
13 how the, you know, closer to the front line, how that  
14 really works and what we need to do to improve the  
15 system. So thank you. Further comments?

16 (No response.)

17 MR. ODUM: Okay, thank you all very much.  
18 Thanks again Peggy.

19 (Applause.)

20 MR. DAVIDSON: Well thank you very much.  
21 We do have a motion and a second to adopt the  
22 proposed final report of the NPC Committee on

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1 Emergency Preparedness and I know that Marvin and  
2 Peggy have noted some of the comments here, many of  
3 which will be thought about as we implement this, as  
4 well as I've heard a couple of ideas that may be  
5 candidates for future study as well.

6 So with that, I would like to call this to  
7 vote and for all those in favor say "aye."

8 (Chorus of "ayes.")

9 MR. DAVIDSON: Do we I have any opposed?

10 (No response.)

11 MR. DAVIDSON: Great, well the report is  
12 adopted without objection and I have to say first of  
13 all thank you Marvin, your Vice Chairs, Members of  
14 the Committee, once again an example of a great job.

15 A number of you, your organizations were  
16 involved as well as a multitude of volunteers. And I  
17 would also say that I heard the word "commitment"  
18 over and over from both Marvin and Peggy. Because  
19 this report is, I think, a bit different than some of  
20 the ones that we produced in recent years because  
21 versus some of the studies that were all about, you  
22 know, really building and understanding and then



1 communicating that understanding on the state of  
2 certain issues.

3           This requires us to join with the  
4 Department of Energy and other agencies and other  
5 organizations that are involved, to be prepared and  
6 that means that we're going to have to work through  
7 the implementation recommendations of this because we  
8 know that, unfortunately, disasters will occur and  
9 the ability of our collective government and industry  
10 being able to respond will have a tremendous and  
11 positive impact on the lives of those who are being  
12 impacted by these disasters.

13           So this is a great report. I think it's a  
14 great example of the type of things that this  
15 organization can do and again Marvin congratulations  
16 on bringing this to conclusion.

17           Mr. Secretary, it's with great pleasure  
18 that the National Petroleum Council submits this  
19 report to you. As we all heard the effort that went  
20 into this study was extensive and thorough and we had  
21 a great input from literally hundreds of individuals  
22 and organizations.

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1                   And we're particularly grateful to you,  
2   Mr. Secretary and the current and Former Deputy  
3   Secretaries, Adam Sieminski for the cooperation and  
4   support that's been provided from DOE, EIA, and other  
5   governmental agencies in helping us to prepare this,  
6   and we look forward to sharing these results with  
7   you.

8                   We also look forward to carrying out the  
9   implementation of this program as well. Which brings  
10  us to the next Agenda Item. Again, thank you so  
11  much. I know that was a very thorough report but we  
12  really -- it's important that everyone understand  
13  that and I appreciate the comments and thought that  
14  went into it.

15                  Now we'd like to hear from Secretary  
16  Moniz. For those of you who didn't know the  
17  Secretary in his prior lives at DOE or MIT --

18                  (Laughter.)

19                  MR. DAVIDSON: You certainly do now as he  
20  has been a familiar face on TV, congressional  
21  hearings, major domestic and international venues,  
22  promoting the nation's abundant and diversified

1 energy sources.

2 So it's with great pleasure that I  
3 introduce Secretary of Energy, Ernie Moniz.

4 (Applause.)

5 SECRETARY MONIZ: Well thank you Chuck or  
6 Jim. Actually Chuck and I have long running  
7 conversations, particularly on the Eastern  
8 Mediterranean. It hasn't gotten easier, has it? But  
9 really appreciate it and of course, very pleased to  
10 receive this report on emergency response and  
11 preparedness and looking forward, of course, to the  
12 Arctic report shortly.

13 And I really want to repeat the thanks to  
14 both Marvin and Petty and Rex and Carol. I think  
15 this really does show a tremendous level of  
16 commitment and effort, and I know of many, many more  
17 as well, but it's really very much appreciated.

18 You know, last year, in talking to the  
19 Council I did suggest that we -- I think as Chuck  
20 essentially has alluded to, that we change a little  
21 bit the character of some of the reports that have  
22 been done by the Council over the years, and maybe

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1 focusing a bit more on more streamlined focused  
2 reports with actionable outcomes.

3           The actionable is certainly there and  
4 going from cast of thousands to hundreds, really is  
5 another magnitude step in terms of focusing in on  
6 particular issues. And so that's really appreciated.

7           I was going to say my colleague, John  
8 Deutsch, of course, when I get up he leaves -- just  
9 note that actually John, in addition to being on the  
10 NPC, and the NPC is a group, again, as we've seen  
11 right just now, whose advice we really are seeking, I  
12 would just mention that Professor Deutsch is also the  
13 Chairman of our Secretary of Energy Advisory Board,  
14 so I's another channel for advice and having the  
15 overlap of those two actually is quite useful.

16           I do want to -- earlier it was mentioned,  
17 a set of new players at the Department of Energy, and  
18 I'd like to say a few more words about that.

19           First and foremost, our Deputy Secretary,  
20 Liz Sherwood-Randall. Liz joined -- took up the post  
21 early October, so she is nearing the quarter pole  
22 with another eight quarters to go after this one. I

1 just want to say Liz was most recently Special  
2 Assistant to President Obama and White House  
3 Coordinator for Defense Policy, Countering Weapons of  
4 Mass Destruction, and Arms Control. She oversaw  
5 various efforts removing chemical weapons from Syria  
6 and implementation of the President's Nuclear  
7 Security Agenda.

8           As I think most of you know, in addition  
9 to the issues that we are discussing today, the  
10 Department has a substantial responsibility for this  
11 country's nuclear security agenda, and I'll just say  
12 that's where I really first met Liz, appreciated her  
13 intellect, organizational clarity, and I might say  
14 synchronic work view, all very good qualities for  
15 being a partner with me in advancing the Department's  
16 business.

17           I also want to recognize Dan Poneman, who  
18 is the longest serving Deputy Secretary at the  
19 Department, and his commitment to stay beyond five  
20 years and it was a completely seamless transition  
21 literally from one day to the next. So we owe Dan  
22 also major debt of gratitude.

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1                   And, of course, we have the former and  
2                   current Co-Chairs -- government Co-Chairs of your  
3                   study groups. And you'll be hearing from Liz in a  
4                   few minutes.

5                   On the confirmation side, many of you also  
6                   know it's been a pretty slow grind for a while, but  
7                   things are looking up, and in particular on the  
8                   energy team.

9                   Yesterday we swore in two members of that  
10                  team into their new posts. Franklin Orr from  
11                  Stanford, I think probably many of you know him. He  
12                  should be well known in the Hydrocarbon community  
13                  from his research. He also helped built up arguably  
14                  the second best university energy program at  
15                  Stanford.

16                  (Laughter.)

17                  SECRETARY MONIZ: And some of you who  
18                  helped to do that are here. Ellen Williams, another  
19                  one you may know. Ellen is a very distinguished  
20                  professor of Materials Science for a long time at the  
21                  University of Maryland.

22                  I noted yesterday after swearing her in

1 that when I was head of Physics at MIT, I tried to  
2 hire her 22 years ago. It did not work, but I am  
3 persistent and she is now the Head of ARPA-E, but you  
4 may also know her last position, prior to that was  
5 Chief Scientist at BP. So she also comes with a very  
6 considerable knowledge about this field.

7 And then Chris Smith, who has actually  
8 been effectively doing the job heading Fossil Energy,  
9 but now confirmed. We still need some paperwork done  
10 but he will very soon be officially in the job and I  
11 think you know the job that he does.

12 So all three of these newly empowered  
13 individuals really have very deep connections to this  
14 community and I think -- so we will welcome, of  
15 course, further interaction.

16 The -- coming to you today and obviously  
17 this group is very familiar with the fact that we are  
18 in a pretty dynamic time in the energy industry with  
19 domestic production. I don't need to give this group  
20 the story there. But one thing of relevance,  
21 actually to some of this discussion, particularly on  
22 emergency preparedness is, the different geography of

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1 production, of course, has major implications on  
2 infrastructure and supply chains, and I'll come back  
3 in terms of what we are doing in our quarterly energy  
4 review.

5           We've had just recently state actions,  
6 North Dakota and New York, which we will all have to  
7 understand. North America, I will come back to this.  
8 On Monday, we held for the first time in seven years,  
9 a trilateral meeting of the energy ministers of  
10 Canada and the United States and Mexico and certainly  
11 one of the major features there was getting a very  
12 in-depth understanding of the energy reform in  
13 Mexico, which is quite breathtaking in its scope, its  
14 ambition. Clearly with major implications for this  
15 business.

16           We could go on and on with infrastructure  
17 challenges and continue to cost reduction in  
18 renewable, a different story. Demand side, success  
19 leading to challenge of a variety of business models.  
20 Certain that's true in the utility business.

21           So it's a Ukraine/Russia situation and  
22 energy security, energy security looking beyond our



1 borders to the shared responsibilities and  
2 implications of energy insecurity of our allies and  
3 friends.

4           So we've got a lot on the table to work  
5 through and we certainly at the department want to  
6 stay in close touch with the industry, make sure we  
7 understand your perspective and get your suggestions  
8 on a whole variety of issues.

9           Lastly, I should have mention maybe in  
10 particularly the context of the recent, last month's  
11 announcement that President Obama and President Xi,  
12 in terms of going forward on the road to Paris for  
13 Climate change, again another major issue that we all  
14 need to deal with.

15           On the -- let me say a few words on the  
16 trilateral meeting because I think it's of interest.  
17 As I said the reform agenda in Mexico is of great  
18 importance I think for North America and for the  
19 global market, and for opportunities, obviously, for  
20 our industry.

21           First of all let me say it was a very,  
22 very productive meeting. There were several areas

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1 where we are moving forward. One Adam Sieminski can  
2 tell you more about, we are going to -- we have  
3 committed, we signed an MOU to move forward on much  
4 better data integration among the three countries.

5 That includes export/import flows of  
6 various commodities. I think this group knows very  
7 well, at least the kinds of flows in the oil and gas  
8 sector across both borders, but perhaps less well  
9 known is the fact that we are today net importers of  
10 electricity from Mexico, as well as Canada, of  
11 course.

12 So getting better and agreed to maps of  
13 energy infrastructure, particularly the integration  
14 of energy infrastructure that we already have and  
15 that will only increase going forward. So Adam and  
16 EIA are point person for that.

17 We will also be looking at sharing  
18 information in terms of sustainability and best  
19 practices in production. Of course, in Mexico with  
20 the extension of yield furthers, certainly a strong  
21 interest in shale, as well as other resources in the  
22 deep water of Gulf, etcetera, and we will be looking

1 to extend the kinds of work we are doing on the  
2 quadrillion energy review in terms of understanding  
3 infrastructure needs going forward, including  
4 resilient infrastructure, again a topic quite  
5 relevant to the report that Marv led.

6 In fact, coming out of the discussion, we  
7 went in with these three areas to discuss and we are  
8 moving forward in all three of those areas. However,  
9 we came out with a much longer list of other areas  
10 that are of clear trilateral interest.

11 One of those was a very strong interest in  
12 looking at emergency preparedness and response across  
13 the borders. And certainly some of the issues that  
14 were mentioned, looking ahead to waivers, etcetera,  
15 there were issues with state borders. Now we're  
16 talking national borders, and we saw those problems  
17 as well in Sandy, as Canada responded with assets to  
18 help us, but we had a few problems at the border in  
19 terms of timeliness of that response.

20 So that's going to be another issue, and I  
21 think it was John who mentioned that looking at these  
22 issues would be important, and somehow we may wish to

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1 take that up a little bit as an extension of the  
2 report.

3           There were other areas -- they gave us a  
4 long list -- I'll just mention one other one which we  
5 are very focused on and they -- actually our Mexican  
6 colleague, Minister Joaquin Coldwell, was the one who  
7 first brought it up to the enthusiastic response of  
8 all of us, and that is the human capacity challenges.

9           The workforce development in the industry,  
10 another very interesting energy industry challenge.  
11 As the reform agenda opens up direct opportunities in  
12 the hydrocarbon sector, but also I remind you also an  
13 electricity reform at the same time, but in general  
14 as their, let's say regulatory structures, come much  
15 more in line with those of the United States and  
16 Canada, the issue of mobility, not only of  
17 infrastructure but of people, becomes a very, very  
18 interesting issue.

19           So we will also be looking at the human  
20 capacity questions and here, I want to say at the  
21 Department, we have been working hard on Women in  
22 Energy Agenda, on a Minorities in Energy Agenda.

1                   We have just created, and are in the  
2 process of setting up a jobs strategy council that is  
3 department-wide, to be looking at these issues of  
4 jobs and training and I want to give a little  
5 call-out. I don't know if Jack Gerard is here, but  
6 Jack and API have stepped forward in partnership with  
7 us, particularly on the Minorities in Energy Agenda,  
8 running regional meetings across the country  
9 specifically to look at building up our workforce and  
10 drawing upon the underrepresented communities in our  
11 workforce.

12                   Looking out at this audience, I'm sorry to  
13 say does not in any way contradict the demographic  
14 challenges we see in this industry in terms of  
15 building up our future workforce.

16                   So that was a very, very I think  
17 productive meeting and one that we would also convert  
18 into an action agenda.

19                   Let me say a few words about the  
20 Quadrennial Energy Review. For those of you who  
21 don't know, I'm not going to go into great detail,  
22 but because many of you do know, but we are putting

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1 together a multi-year effort looking at how we bring  
2 together all of the equities and threads that come  
3 into a coherent energy policy across the entire  
4 government.

5 I mean that's the key. We are the  
6 Department of Energy, but as you know the equities in  
7 energy span the government, basically -- defense, and  
8 state, and commerce, and agriculture, and interior,  
9 and we go on and on and on.

10 And so what we are doing is -- discussed  
11 this last year but some of you probably weren't there  
12 -- what we're doing is taking a first bite of this  
13 year and that first bite -- it's a pretty big bite --  
14 but it isn't at least a whole apple, is on energy  
15 infrastructure.

16 So transporting, storing, and distributing  
17 energy is the focus. As I already alluded to, and as  
18 we have learned much more about, we have a lot of  
19 infrastructure challenges, partly driven by the  
20 success actually and the new geography of some of the  
21 production.

22 We will be issuing that first installment

1 at the end of January. There has been a tremendous  
2 amount of analysis and multi-agency collaboration  
3 under White House chairmanship, to bring all these  
4 threads together and that's something that would be  
5 great to be able to come back and discuss in more  
6 depth once we have that first review prepared.

7 I mean, I'll give you just as examples of  
8 some of the things that will be coming up. Our  
9 infrastructure focus is not just on what you might  
10 call the energy infrastructure per say, because, for  
11 example, right now one of the challenges is what you  
12 might call the associated infrastructures -- trains,  
13 waterways.

14 Frankly that is something that I certainly  
15 learned a lot more about in the last six months. We  
16 have huge issues around waterways that have to be  
17 addressed. So we will be having some recommendations  
18 there.

19 On the other hand, we'll be expect to be  
20 posting some of these analysis papers soon. On the  
21 other hand, in looking at the natural gas  
22 transmission infrastructure in a world in which

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1 natural gas continues to get additional electricity  
2 market share, to be honest the analysis finds that  
3 there are not enormous calls on continental scale  
4 requirements. There will be some regional  
5 requirements but there in contrast to my earlier  
6 point, this is a case where probably the challenge is  
7 somewhat less than we might have -- at least I might  
8 have thought going into the analysis.

9 Just gives you a flavor of the kind of  
10 thing that we'll be doing. And as I say, this will  
11 be -- we are targeting the end of January for that  
12 first installment.

13 I might also add, and this is particularly  
14 relevant to that Rex talked about in terms of the  
15 Arctic, that another activity under that umbrella in  
16 a certain sense is the Quadrennial Technology Review.

17 Some of you might have been in the big  
18 jamboree a couple weeks ago on this, but whatever the  
19 case, in the spring we expect to be coming out with  
20 the Quadrennial Technology Review, which as I  
21 suggest, is going to focus down on our technology  
22 programs going forward, and there the Arctic report.



1 is one that we will look forward to because it's  
2 again very, very timely coming into that.

3 It's timely, obviously in terms of the  
4 U.S. Chairmanship of the Arctic Council starting  
5 April 1st, but it's also timely in terms of  
6 intersecting with our Quadrennial Technology Review.

7 On the Arctic study coming forward, I'm  
8 not going to repeat all the things that were said in  
9 terms of the opportunity, we know it's there and we  
10 will wait for some of the specific suggestions going  
11 forward.

12 Just want to say, with that Chairmanship  
13 on the Arctic Council, it's clear that we will be  
14 doing more there. We will be doing more also  
15 bilaterally with Canada. Mexico has a little bit  
16 less interest in the Arctic at the moment, but  
17 certainly bilaterally with Canada we'll be doing a  
18 lot.

19 And I'll just like to say, well first of  
20 all I had a terrific visit in Alaska in August and  
21 got a chance to see some things, including the  
22 University of Alaska-Fairbanks I know was represented

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1 here today and a nearby, small but interested  
2 permafrost laboratory that's actually run by the Army  
3 Corp of Engineers.

4           And this obviously does not apply to the  
5 offshore conventional production, but it is another  
6 issue that I think we've looked at with changes, with  
7 global warning, with changes in the permafrost. We  
8 have a whole variety of challenges to look at and it  
9 has now been an interesting little laboratory there  
10 with some longitudinal data in terms of studying the  
11 permafrost that might be interesting to look at.

12           Another area, and it was mentioned in the  
13 presentation, that there was -- first of all the  
14 meeting in Alaska including meeting with the Alaska  
15 native communities and corporations that is another  
16 area that in the Arctic area we will be looking at in  
17 terms of the rather dramatic energy needs of those  
18 communities, and that may be another opportunity for  
19 us to come back and think about some of our joint  
20 work.

21           On the Emergency Preparedness Study, I  
22 might have to say, of course, in other activities,

1 that we currently are carrying out relevant to the  
2 Arctic region are things like are -- this is a much  
3 longer-term issue than the study, but methane  
4 hydrates, for example, are another are that we will  
5 continue to work on.

6 Turning to the Emergency Preparedness  
7 Study and Liz Sherman-Randall is going to say a lot  
8 more about this as the government co-chair, I'll just  
9 make a couple of points.

10 The Department of Energy has got a pretty  
11 complex mission space. The whimsical summary is  
12 weapons and windmills, quirks and quagmires. So we  
13 have nuclear security, we have energy, we are a  
14 backbone of the American scientific research  
15 enterprise, and we have the responsibility of  
16 cleaning up the cold war mess.

17 Those are our four kinds of history  
18 mission areas. I might say that energy emergency  
19 response preparedness is kind of like a new mission  
20 for us and that's why this is really very important  
21 discussion.

22 The Department has had historically a

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1 major role in emergency response, but that's been  
2 emergency response for nuclear emergencies, where  
3 obviously the expertise is in our laboratories,  
4 almost exclusively, and it's an inherently government  
5 function.

6 We are committed to building up and we are  
7 responsible for building up emergency response now in  
8 the energy sector, which is a very, very different  
9 kettle of fish, given of course, the fact that the  
10 infrastructure is in the private sector, mostly.

11 Okay we have our power marketing  
12 administrations, etcetera, but fundamentally dealing  
13 with the private sector and many of the discussions  
14 that you heard this morning, in the report, of  
15 course, if it wasn't entirely explicit, certainly  
16 implicitly, strongly raise this issue of how does the  
17 private sector, and especially one that was discussed  
18 that in fact has more players in the value chain now,  
19 and the department, how do we work together in  
20 advancing that again.

21 Now, the recommendations I think were  
22 right on, but again I'll let Liz come back to that

1 but I do want again thank the NPC for this, but also  
2 to say that, you know, I think we both have a lot to  
3 learn as to how we build this up into an effective  
4 response capability.

5 And going to Amory's point, certainly the  
6 interdependencies of these infrastructures are very,  
7 very critical and that is something that we will take  
8 on at some level in the Quadrennial Energy Review.

9 Again natural events as Amory summarized,  
10 cyber, geomagnetic storms, physical attacks, we can  
11 go on and on. The question is how are we going to  
12 design or help guide, from the government side,  
13 infrastructure evolution for the next decades that  
14 gets us where we want to go in terms of economic,  
15 transactional capacity, security, resilience,  
16 etcetera, and also have the response, preparedness  
17 and response capacity for when things go wrong and  
18 again that's going to be wild, but I think we have to  
19 keep making progress every year.

20 We kind of use certain things like cyber  
21 security, of course, are not particularly weather  
22 dependent, but we kind of use hurricane season as a

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1 good marker for our annual work and again I want to  
2 recognize, in terms of the industry, that again  
3 actually with API for the last season we had some  
4 very good collaboration in terms of developing supply  
5 chain awareness, as related to emergency response.

6 We just want to keep working with the  
7 industry year after year and keep building up that  
8 capacity as we can.

9 So again, thanks very much to the leaders  
10 and the participants in both studies. We know this  
11 was, you know, takes a lot of effort, which we really  
12 appreciate. We will commit to being partners in  
13 translating this into action because again that is  
14 what we'd like to do with the NPC, is have these  
15 reports that are focused on an area and are  
16 translatable into action and Chuck it's time to get a  
17 new agenda in place for the next two years. Thank  
18 you very much.

19 (Applause.)

20 MS. SHERMAN-RANDALL: Good morning and  
21 thank you Ernie. I appreciate the generous  
22 introduction and your warm welcome to the Department.

1 I also want to thank our colleagues first to Chuck  
2 and Jim Hackett in absentia. Today would have been  
3 his last day in the Chair for the NPC and we have  
4 appreciated his great leadership.

5 Thanks to Rex and to Carol for your  
6 tremendous work. To Marvin and to Peggy as well.  
7 And I want to thank Paula Gant who has been the wing  
8 woman for the NPC on both of these studies and your  
9 many contributions have been invaluable.

10 Finally to Dan Poneman who handed the  
11 baton to me in October, as the Secretary said, in  
12 particular your work in advancing the efforts in  
13 emergency preparedness and response have been  
14 path-breaking and I'm so fortunate to benefit from  
15 what you did Dan, that I can now carry forward.

16 We had excellent discussions in November  
17 at the Committee's meeting in Houston and also in  
18 several conference calls in preparation for today.  
19 And the recommendation on emergency preparedness are  
20 as Marvin indicated, not rocket science. They're  
21 pretty simple and straightforward. What we have to  
22 do is implement them.

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1                   Our job is to build, maintain, and  
2   exercise the connections, the communications, and the  
3   processes necessary for effective emergency  
4   management and response.

5                   And as the Secretary said, we are  
6   committed to action. The Council's report is  
7   invaluable in this regard and I would note in  
8   particular the final page that was added on  
9   implementation, which gives us a road map, including  
10  timelines, for getting things done.

11                  We've already started the necessary  
12  planning to better harmonize our emergency response  
13  team structure with the national response framework  
14  and the national incident management system, as was  
15  recommended in the report.

16                  And while we still have work to do, we are  
17  closer to operating by a common playbook. Meaning  
18  that the people involved in emergency response can  
19  easily understand their roles and responsibilities  
20  and how to communicate with one another.

21                  We will find the best way to integrate EIA  
22  subject matter expertise into the DOE-wide emergency



1 response team in a permanent and meaningful manner  
2 without stepping on Adam's autonomy.

3 And we'll also be including key industry  
4 partners in the planning documentation and testing of  
5 our processes as we move forward.

6 What we talked about in our November  
7 meeting in Houston was how much leadership matters,  
8 and that's why your presence here today is so  
9 important.

10 In past emergencies we have seen  
11 first-hand how important it is to engage with senior  
12 leaders who have the authority to make decisions  
13 quickly, even when those decisions may carry  
14 financial consequences.

15 During Hurricane Sandy, we brought  
16 together the highest levels of the Federal  
17 government, including the President, and the highest  
18 levels of industry, to share information and make  
19 decisions that would not have been possible or as  
20 rapid at a lower level in these respective  
21 organizations.

22 At our meeting in November, former Houston

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1 Mayor Bill White, who I don't see in the audience  
2 today, told a vivid example about handling Hurricane  
3 Katrina, as we were discussing regulatory issues,  
4 when tens of thousands of people flooded into Houston  
5 and needed their prescriptions but had no money, no  
6 credit cards, no nothing, and certainly not the  
7 pieces of paper that would have provided them with  
8 the capacity to fill them.

9 To fill prescriptions, companies like CVS,  
10 Walgreens and WalMart were in a situation in which  
11 they had to take financial and legal risk, they would  
12 like lose money and potentially violate a lot of  
13 regulations if they made those medications available  
14 to displaced people.

15 But with assurances from members of  
16 Congress that a regulatory fix would be on the way,  
17 leadership at these companies determined that the  
18 right thing to do was to provide prescription  
19 services in order to save lives.

20 We learned from that and we know that  
21 going forward we need to look, as was mentioned  
22 earlier, at the regulatory issues that might face us

1 in a crisis and try to pre-position responses so that  
2 we don't lose precious time.

3 We want to take this opportunity also to  
4 institutionalize key relationships, including  
5 streamlining the communications between DOE and  
6 industry liaisons for improved institutional  
7 awareness and more effective response.

8 And again, leadership here is very  
9 important. I'm encouraged by your commitment and the  
10 investments that have been made by people in this  
11 room, in establishing, maintaining, and exercising  
12 your emergency response processes within your own  
13 companies, among yourselves, and now as we move  
14 forward to try to exercise together, which is a key  
15 element of the recommendations in this report.

16 We want to do this work together and I  
17 very much appreciate the pledge that the study sets  
18 forth, that industry will work with us to ensure that  
19 we have the means to call quickly on senior  
20 executives when time is of the essence.

21 As was noted, the Oil and Natural Gas  
22 Coordinating Council has done great work to create a

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1 trusted relationship with DOE and has helped to  
2 provide timely information during emergencies.

3           The Council has also worked with the  
4 electricity sector to contribute to the new energy  
5 sector specific plan, which is in final stages of  
6 review. I want to build on this work and raise it up  
7 and what I've asked is to add an element to the Oil  
8 and Gas Subsector Coordinator Council that brings  
9 together executives under its auspices because that's  
10 part of the work that the Oil and Sector has been  
11 done at a working level.

12           During Hurricane Sandy, we learned a lot,  
13 the hard way, about interconnections with the  
14 electricity subsector and the importance of real time  
15 information and communication between this sector and  
16 the electric sector.

17           We had to know where we had fuels and no  
18 electricity and where we had electricity but no fuel.  
19 We needed to know where to send utility trucks to  
20 refuel and where to send fuel trucks.

21           We've made a lot of progress at the  
22 technical level on developing situational awareness.

1 But what I want to make sure is that we are building  
2 and testing the needed relationships across sectors  
3 in advance of crisis.

4 So with your support, I want to enable the  
5 Oil and Natural Gas Subsector Coordinating Council to  
6 interface directly with the electric subsector  
7 coordinating council. This would involve identifying  
8 senior leaders that will represent the oil and gas  
9 sector when interfacing with electricity sector CEOs.

10 In a steady state, these routine  
11 discussions can be strategic and look to anticipate  
12 policy challenges, given the dynamic threat  
13 landscape. And there I would just note what Amory  
14 Lovin said, the work that we can do to prepare for  
15 natural disasters will poster us much better in the  
16 face of man-made threats that are evident to all of  
17 us.

18 Related efforts would include a tabletop  
19 exercise involving senior DOE and industry leaders  
20 from both the oil and gas sector and the electricity  
21 sector to test our communication and coordination  
22 mechanisms.

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1           As we all know from our own experience  
2 there will be gaps in any emergency response plan and  
3 I've learned in the years that I've worked on  
4 national security issues, every time I exercise, I'm  
5 surprised by those gaps, and this enables us to  
6 prepare better for what we will face.

7           I learned in Houston that this industry  
8 prefers to use the word "drilling" in place of  
9 "exercising," and I'm glad to call it drilling, what  
10 we need to do is drill together to ensure that we are  
11 ready in advance of crises.

12           I'll shift now briefly to the Arctic  
13 study, which is underway as you know. I've been so  
14 appreciative of the work that has been done thus far,  
15 and here your leadership is vitally important.

16           During the last Arctic Steering Committee  
17 meeting with Rex and others, I offered to put  
18 together a broader strategic presentation for the  
19 group on the context within which the oil and gas  
20 sector is operating in the Arctic region.

21           And so what I would propose to do is come  
22 to Houston prepared to present that to the meeting

1 that we anticipate having early in February.

2 With that, I want to thank you again for  
3 all of your work and underscore how ready the  
4 Secretary and I are to put your ideas into action. I  
5 look forward to working immediately together to  
6 enhance our emergency preparedness.

7 As was noted, hurricane season is a good  
8 marker for us in terms of preparation and response,  
9 but we need to be ready all year round for what may  
10 surprise us and what we want to be prepared to  
11 respond to.

12 Mr. Secretary I believe we are ready to  
13 take a few questions if you still have time. Is that  
14 correct?

15 (Applause.)

16 SECRETARY MONIZ: Well this was the time  
17 in the program when I would say a few words of thanks  
18 to Jim Hackett. Now I don't know, maybe he's  
19 listening in on the website, but if you are, thanks  
20 very much for your two years of chairmanship, but I'd  
21 also note that he really championed I think the 2011  
22 NPC study on Prudent Development, Marshall, correct,

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1 right? And that, of course, had a theme of  
2 stakeholder -- the importance of stakeholder  
3 engagement, which is a thread I think in both of  
4 these reports coming up. So thanks for that Jim.

5 I would also be presenting him a gift from  
6 the Department of Energy and while we have complete  
7 confidence in Chuck, we'll just mail it to him  
8 directly.

9 (Laughter.)

10 SECRETARY MONIZ: So again, thanks to Jim  
11 Hackett. Oh yes, okay, and as Liz says, yes, we  
12 could take a few questions.

13 MR. DAVIDSON: Please go ahead and as you  
14 have a question, to identify yourself and your  
15 organization just for the benefit of the record.

16 MR. TINKER: Scott Tinker, University of  
17 Texas and Ernie I'd say MIT and Stanford are second  
18 and third in energy, but that's just my bias.

19 (Laughter.)

20 MR. TINKER: So there has been a  
21 noticeable change I think in understanding energy in  
22 DC so Ernie I congratulate you on that and the team



1 you've put together.

2           You mentioned talent, and we call that the  
3 great crew change in this industry. A  
4 research-support university is critical for talent.  
5 Currently U.S. federal support for oil and gas  
6 research, let's just say is anemic, at best and  
7 particularly with Ripsey going away, which was small  
8 even there.

9           You know, that has been called corporate  
10 welfare. I guess this industry is unique in that  
11 corporate welfare because any other industries  
12 receive plenty of federal welfare, which has been  
13 called a corporate welfare for that kind of support  
14 here is a term I've heard and seen in testimony to  
15 Congress many times.

16           With shale, there is a real opportunity  
17 for fundamental research that's going to go on for  
18 decades. We're right at the beginning of  
19 understanding their basic research.

20           And so I want to ask, since action seems  
21 to be the word of the day -- what are the DOE's  
22 action plans for supporting oil and gas research with

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1 competitive funding at universities in the U.S.?

2 SECRETARY MONIZ: I'll start on that and  
3 then if Liz wants to come in, but certainly Chris  
4 Smith I think should as well come in on the R&D  
5 agenda. Certainly we all recognize that the oil and  
6 gas research agenda particularly post the Ripsey  
7 effort, obviously is not on the scale of that in some  
8 other areas -- renewable, efficiency, etcetera.

9 But I do think that without arguing about  
10 the precise amount, I think we are in a place where  
11 the industry certainly carries a huge R&D -- RD&D  
12 investments.

13 So we do work with -- we need to work on  
14 those more generic activities typically with a longer  
15 wavelength in terms of going forward.

16 We all know, you know, the history in  
17 terms of unconventional, you know, a pretty modest  
18 investment back in 1979 to 82, in terms of some  
19 characterization work, had a huge impact later on  
20 when amplified, of course, dramatically by the work  
21 done in industry.

22 So those are the kind of things that we

1 will certainly focus on, but let me make some other  
2 comments Scott.

3           First of all, we are taking some new steps  
4 so the following is not called oil and gas explicitly  
5 -- and by the way Scott, I can't see you, of course -  
6 - there you are -- so for example, we have started a  
7 so-called cross-cut called subsurface science and  
8 technology and this has relevance to hydrocarbon  
9 business. It also has relevance to engineer,  
10 geothermal, it has relevance to carbon sequestration,  
11 we could go on, and that would be looking at very,  
12 very fundamental issues in terms of understanding and  
13 potentially have the grounds for managing fractures  
14 in the subsurface.

15           For example, it would involve some issues  
16 of the linkage between seismic activity and the built  
17 environment, which again has many, many applications.

18           So those are the kinds of areas that we  
19 are looking to Scott. But I would add another thing,  
20 which again is not scored as oil and gas or anything  
21 else in terms of the fuel, and that is the enormous  
22 network of scientific facilities available to the

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1 entire research community. And that is, for example,  
2 key, absolutely key tools for a whole set of advance  
3 materials development with broad application.

4           So I think, you know, it's not -- I'm not  
5 sure we look only at what it's called specifically  
6 oil and gas research to understand the breath of what  
7 we do. Chris would you like to -- oh I'm sorry, and  
8 one other thing I'll just add, going back to how you  
9 started the question, which was on human capacity,  
10 the -- another thing that we just started and we just  
11 were authorized for in the FY '15 omnibus, is we  
12 would like to build up and your ideas would be most  
13 welcome.

14           Traineeship programs -- I want to  
15 emphasize traineeship programs as different from  
16 research assistantships, as different from  
17 fellowships, so these are more in the NIH mold where  
18 we identify areas of need in terms of human  
19 capacity, attach to our mission, any of our mission  
20 space, and then through a competitive process, we'll  
21 have universities lead that, be responsible for  
22 developing curricular, courses, etcetera, that can be

1 spread to other universities, and build up a  
2 workforce -- an advance workforce in specific areas  
3 in Department of Energy mission need.

4 So we are doing some new things along t  
5 hose lines Scott that I think are quite relevant.

6 MR. SMITH: Thank you Mr. Secretary. I'll  
7 be brief. We tend to get called upon after the  
8 Secretary has already answered the question in great  
9 detail, but I'll build on that on just a couple  
10 points -- and excuse my voice this morning. The  
11 first is --

12 SECRETARY MONIZ: Chris you're confirmed  
13 now so you can be more forward leaning.

14 (Laughter.)

15 MR. SMITH: A couple points here. First  
16 we're working very hard to make sure we're defining  
17 the appropriate government rule for research and  
18 development, and that's one thing that we work very  
19 closely with a lot of people here in this room.

20 So when you look at the R&D that we manage  
21 within the Department of Energy, it tends to be  
22 geared towards issues of environmental sustainability

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1 and safety.

2 The research and development stem within  
3 the companies tend to be very good at getting  
4 companies better producing, but there is lots of work  
5 to be done to understand all of the impacts from the  
6 Arctic to the unconventional drilling could have on  
7 our exploration production activities could have on  
8 the public.

9 So everything from protecting groundwater  
10 to reducing emissions of methane to surface impacts,  
11 those are the areas that we're really leaning into.

12 We had a -- I think a very productive  
13 collaboration with Ripsey over the last several  
14 years. That program was funded through EPAC 2005.  
15 That program is now sunsetted, but we still do see  
16 some really important work going forward.

17 A last thing that I'll mention is that we  
18 have taken some strides in ensuring that the research  
19 and development that we do within the Department of  
20 Energy is coordinated with that R&D that happens in  
21 other agencies.

22 So we aren't the only agency in this

1 space, but one thing that we have done is we've  
2 created a single Steering Team that looks at all of  
3 the issues that we do with research and development.

4 There are programs also within EPA, there  
5 are programs with USGS. These are all different. We  
6 have different skill sets and capabilities, core  
7 capabilities within DOE that exist within other  
8 agencies.

9 So we want to make sure that the  
10 appropriate work is done within DOE's purview and our  
11 research and development program and we want to make  
12 sure that the appropriate work is done in the other  
13 agencies, and that we are coordinating so that we  
14 don't have (a) we have the appropriate level of  
15 overlap, (b) the right agency is doing the right  
16 work, and (c) we don't have important areas of  
17 research that simply fall between the cracks because  
18 the agencies are not talking to each other.

19 So that's an area that I think we've made  
20 some progress over the last couple years.

21 MR. DAVIDSON: Well, Secretary Moniz, as  
22 well as Deputy Secretary Sherwood-Randall, thank you

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1 for your remarks and we've really been honored to  
2 have you here this morning. I know you've got a busy  
3 schedule and I think we're almost wrapping up on our  
4 agenda. We'll be covering a few administrative  
5 items. So again we really appreciate you attending  
6 with us and again thanks also to the Chairs of the  
7 Studies that we have underway.

8 Great progress on the Arctic and  
9 congratulations again on reaching, I would say, not  
10 the end but the mid-point on emergency preparedness  
11 as we commit to go ahead. So thanks again so much  
12 and we're going to take just a second here because at  
13 this point, we're going to have a couple  
14 announcements.

15 One is our webcast is concluding so the  
16 webcast is going to be turned off. So for those who  
17 joined us by the web, we appreciate you listening in  
18 and also I encourage everyone to download and read  
19 the emergency preparedness report that will be posted  
20 shortly.

21 And then second, for the members of the  
22 press here today, for about five minutes following



1 the meeting's adjournment, the emergency preparedness  
2 leaders will be available here at the head table to  
3 respond to your questions.

4 Thank you very much, thank you very much.

5 (Applause.)

6 MR. DAVIDSON: Okay we've got some  
7 administrative reports. We'll call on Greg Armstrong  
8 who will present the Committee's report.

9 MR. ARMSTRONG: Good morning. In  
10 addition to reviewing the periodic performance  
11 reports throughout the year, the Finance Committee  
12 has met twice this year to review the Council's  
13 finances, once in early November and then again  
14 earlier this morning.

15 Our November meeting included a review of  
16 the calendar year 2013 draft audit report and the  
17 draft form 990, with Johnson Lambert & Company, who  
18 are the Council's outside auditors.

19 The auditors provided the Council a clean  
20 opinion letter which also agreed that our financial  
21 controls were sound. At this meeting we also  
22 reviewed the 2014 expenditures to date, as well as

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1 the status of the 2014 contributions request, both of  
2 which indicate that we should end the year with a  
3 slight surplus.

4 This is due in large part to the NPC  
5 management's vision with respect to expenditures and  
6 your response with respect to contribution requests  
7 which currently equals about 96% of the funds  
8 requested.

9 I would ask that if you have not yet made  
10 your 2014 contribution, that you do so before the end  
11 of the year.

12 Earlier this morning the Finance Committee  
13 again met to consider a variety of topics, most  
14 notably the proposed 2015 budget, which is a slight  
15 decrease from 2014's approved budget amount.

16 And accordingly, the Committee recommends  
17 a calendar year 2015 budget in the amount of  
18 \$5,614,000 and member contribution request in the  
19 same amount to fully fund the budget.

20 The recommended budget supports the  
21 Council's ongoing operations and printing the  
22 emergency preparedness report that we just approved

1 also included our additional editorial and graphic  
2 resources to complete and print the Arctic research  
3 report in a timely manner, as well as funds to begin  
4 a yet to be determined study later in the year, as  
5 referenced in the Secretary's remarks.

6 In addition to the budget to provide  
7 setting aside funds identical to last year's amounts  
8 for post-retirement benefit liabilities, which is  
9 consistent with the Committee's objective to provide  
10 a degree of certainty for funding these future  
11 obligations.

12 Subject to your approval of the budget and  
13 contribution recommendation, the council will send  
14 2015 member contribution request out early next year.  
15 You'll recall that from my remarks in last July,  
16 starting with the 2013 contribution request, the  
17 Finance Committee adopted modified formulas in order  
18 to maintain the equity in the funding process.

19 In order to effectively transition to the  
20 revised formulas, the Committee agreed to phase in  
21 the impacts of those adjustments in 2013 and 14, with  
22 the transition for the new formulas to be completed

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1 starting with the next year's request.

2 And again there, I would encourage you to  
3 respond expeditiously with your contribution once you  
4 receive the funding request.

5 In addition to our action on the 2015  
6 budget, the Finance Committee's agenda this morning  
7 included the following items: the Committee discussed  
8 and approved retaining Johnson Lambert and Company to  
9 continue to serve as the Council's outside auditors  
10 for the examination of Calendar year 2014 financial  
11 statements as well as the tax forms.

12 The Committee reviewed and approved the  
13 documentation associated with the post retirement  
14 benefit liabilities, as well as implementing the  
15 trust arrangements the whole fund set aside to  
16 discharge the liabilities.

17 The Committee also reviewed the Council's  
18 investment policies for operating funds in the 401k  
19 Thrift and Pension Plans. There were no changes  
20 recommended.

21 And then finally, we concluded our annual  
22 review of the NPC Finance Committee Charter and

1 concluded no changes were required.

2 Mr. Chairman this completes the report of  
3 the Finance Committee and with your permission I  
4 would respectfully move that it be adopted by the  
5 Council membership.

6 MR. DAVIDSON: We have a motion for the  
7 Finance Committee report. I'll ask for a second and  
8 then we can open up for questions. Do I hear a  
9 second? Okay. Any questions or comments?

10 (No response.)

11 MR. DAVIDSON: Hearing none, all those in  
12 favor say "aye."

13 (Chorus of "ayes.")

14 MR. DAVIDSON: Opposed?

15 (No response.)

16 MR. DAVIDSON: Motion passes. Thanks  
17 Greg. And I think I would add that I really  
18 appreciate Marshall -- the work on yourself and your  
19 team for managing cost so that we are able to  
20 basically have a budget that's flat slight decreased  
21 from what the budget we had last year.

22 I know many members of us, certainly those

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1 in the upstream, appreciate a little efficiency at  
2 this time as we face a few headwinds.

3 So our next report -- normally this would  
4 be by Ray Hunt, who -- Ray chairs the Nominating  
5 Committee. Ray is actually in Dallas to celebrate  
6 the 80th birthday of Hunt Oil Company and so Bob  
7 Catell is going to present the report as the Acting  
8 Chair of the Committee.

9 MR. CATELL: Thank you Mr. Chairman. As  
10 has indicated Ray's company is celebrating their 80th  
11 anniversary today so I'm sure we'll congratulate Ray  
12 on that excellent record.

13 The Nominating Committee has agreed on the  
14 recommendations for NPC Officers and Chairs and  
15 Members of the Agenda and Appointment Committees of  
16 the Council, as well as five At-Large Members of the  
17 NPC Co-Chairs Coordinating Committee.

18 Accordingly, on behalf of the Committee,  
19 I'm pleased to offer the following nominations: for  
20 NPC Chair, Chuck Davidson; and for NPC Vice Chair,  
21 Rex Tillerson.

22 For the Agenda Committee, we recommend the

1 following as members: Alan Armstrong, Bob Catell, Ray  
2 Hunt, G.G. Lazenby, David Lesar, Andrew Liveris,  
3 Marvin Odum, John Watson, Bill White, and Daniel  
4 Yergin, with Larry Nichols serving as Chairman of the  
5 Committee.

6 For the Appointment Committee we recommend  
7 the following as members: Nick Akins, George Alcorn,  
8 Matt Cabell, Steve Chazen, Bill Fisher, Greg Garland,  
9 John Hess, Mike Linn, David Seaton, and John Walker,  
10 with Bob Palmer serving as Chair.

11 In addition, we recommend the following as  
12 At-Large Members of the Co-Chairs Coordinating  
13 Committee: Larry Downes, Greg Garland, Steve  
14 Wheeler, Peter Seligmann, and Phil Sharp.

15 That completes the report of the  
16 Nominating Committee and on its behalf, I move that  
17 the above slate be elected until the next  
18 organizational meeting of the Council. Thank you.

19 MR. DAVIDSON: We have a motion, is there  
20 a second? Any questions or comments?

21 (No response.)

22 MR. DAVIDSON: All those in favor say

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1 "aye."

2 (Chorus of "ayes.")

3 MR. DAVIDSON: Opposed?

4 (No response.)

5 MR. DAVIDSON: Great. Thank you Bob. And  
6 thanks to all of those who have been elected to serve  
7 along with you, as well as the many, many others that  
8 are supporting the Council's efforts. We appreciate  
9 it.

10 Rex, thanks for adding your leadership as  
11 we go forward it will be greatly appreciated your  
12 carrying double duty with Chairing the Arctic Study  
13 as well as agreeing to serve as Vice Chairman. So  
14 thank you so much for that.

15 I also wanted to take just a moment since  
16 Jim is not here, but I really wanted to say thanks to  
17 him and his leadership for the past two years. There  
18 is a lot of work that is being undertaken by the  
19 Council and Jim has been very involved in it.

20 I know he worked desperately looking at  
21 all the messages he and I exchanged last night. He  
22 tried valiantly to get here but it's just one of



1 those that we've all faced, it just wasn't going to  
2 happen.

3 But I've appreciated Jim for his  
4 leadership. He's been very inclusive in terms of  
5 bringing several of us involved so he make sure that  
6 not only does the Council carry through with the  
7 important work it does, but also that it's been  
8 managed and led in an appropriate fashion.

9 So thanks to Jim and all the work -- I  
10 guess I'll just ask for a round of applause for Jim  
11 Hackett.

12 (Applause.)

13 MR. DAVIDSON: So one final item we have  
14 on our formal agenda and I would just like to ask if  
15 any Council Member has any other member that they'd  
16 like to raise at this point?

17 (No response.)

18 MR. DAVIDSON: Also, is there any  
19 non-member who would like to be recognized at this  
20 point?

21 (No response.)

22 MR. DAVIDSON: Okay, seeing or hearing

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1 none, we're at that point where I'll entertain a  
2 motion for adjournment. I bet there is a second.  
3 Second, did I hear a second? I'll just jump to  
4 anybody opposed.

5 (Laughter.)

6 MR. DAVIDSON: Thank you very much. I  
7 hope all of you have safe travels to wherever you  
8 continue on next and all of you have a great holiday  
9 as well. Thank you everyone.

10 (Applause.)

11 (Whereupon the meeting adjourned at 11:14  
12 a.m.)

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