

NATIONAL PETROLEUM COUNCIL

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118TH MEETING

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WEDNESDAY,
SEPTEMBER 17, 2008

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The meeting convened at 9:00 a.m.
in the Grand Ballroom of the Fairmont
Washington, D.C., 2401 M Street, NW,
Washington, D.C., Lee R. Raymond, Chair,
presiding.

PARTICIPANTS:

LEE R. RAYMOND, Chair

SAMUEL W. BODMAN, Secretary of Energy,
Government Co-chair

CLAIBORNE P. DEMING, Vice Chair

JIM BURKHARD

ANDREW GOULD, Vice Chair for Technology,
Global Oil and Gas CommitteeALAN KELLY, Chair, Hard Truths Coordinating
Subcommittee

MARSHALL NICHOLS, Executive Director

DAVE O'REILLY, Vice Chair for Supply,
Global Oil and Gas Committee

DONALD PAUL

JIM SLUTZ, Government Co-Chair, Hard Truths
Coordinating Subcommittee

FRANK VERRASTRO

DANIEL H. YERGIN, Vice Chair of Demand,
Global Oil and Gas Committee

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

(9:12:52 a.m.)

CHAIR RAYMOND: Good morning.

Will the 118th meeting of the National Petroleum Council please come to order.

Welcome to all of you, Members of the Council, guests, and members of the press and public. We have what I am sure will be an informative session scheduled for today.

For the members of the Council with us today, I will dispense with the calling of the roll. The check-in will serve as our official attendance record. Any member or observer for a member who has not checked in, please do so before you leave to insure we have an accurate record of today's attendance.

I would like to introduce to you for the record the participants at the head table. On my immediate right is the Council's Co-Chair, the Honorable Samuel W. Bodman, Secretary of Energy. Mr. Secretary, we are pleased that you are here with us this

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1 morning.

2 Next is the Vice Chair of the
3 Council, Claiborne Deming. Next are three of
4 the four Vice Chairs of the Global Oil and Gas
5 Committee that produced the *Hard Truths*
6 report; Dan Yergin, Vice Chair of Demand; Dave
7 O'Reilly, Vice Chair for Supply; and Andrew
8 Gould, Vice Chair for Technology; John Hamre,
9 Vice Chair for Geopolitics and Policy is
10 unavailable, and can't be here this morning.
11 Finally, on my far right is Marshall Nichols,
12 the Council's Executive Director.

13 At the table to my left are
14 representatives from the *Hard Truths* studies
15 Coordinating Subcommittee. Alan Kelly chairs
16 the Coordinating Subcommittee, and Jim Slutz
17 serves as the Subcommittee's government co-
18 chair. Next for Demand is Jim Burkhard, Don
19 Paul for Supply, Frank Verrastro for
20 Geopolitics and Policy, and Rod Nelson for
21 Technology.

22 Our first order of business this

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1 morning is to hear from the Secretary of
2 Energy. Over the past three and a half years,
3 Secretary Bodman has served tirelessly as the
4 nation's eleventh Secretary of Energy, and has
5 proven to be uniquely qualified for the task.
6 I very much enjoyed working with you on the
7 National Petroleum Council matters during your
8 tenure, Mr. Secretary. It has been most
9 gratifying to work with a Secretary who truly
10 understands the energy business. It's scale,
11 it's time constant, and it's infrastructure.

12 This was demonstrated last week by
13 your prompt actions, and those of the
14 President. They helped reduce the impact of
15 the economy of Hurricanes Ike and Gustav.
16 Lessons learned since Katrina and Rita are
17 evident, and are speeding the recovery of the
18 Gulf Coast region and the energy
19 infrastructure.

20 Mr. Secretary, we are honored to
21 have you with us this morning, and look
22 forward to your comments. Please join me in

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1 welcoming Secretary Sam Bodman.

2 (Applause.)

3 SECRETARY BODMAN: Thank you, Lee,
4 for your very kind words of introduction. I
5 have to tell you it's hard to believe that a
6 year has gone by since our last meeting. I
7 know, if I may say to you, sir, this is your
8 final meeting as Chairman, so I want to
9 publicly thank you for the fine work that the
10 Council has done under your leadership. You
11 have made a real impact, and helped prepare
12 America to face a new energy reality.

13 I also want to acknowledge
14 Claiborne Deming of Murphy Oil, the National
15 Petroleum Council's incoming Chairman. Thank
16 you, sir, for your willingness to serve.

17 And then lastly I want to thank
18 Marshall Nichols down at the end there for
19 helping to make the Council function
20 effectively. As I have said before, I very
21 much appreciate your work.

22 I see a number of familiar faces

1 here, and it's good to see you all again, and
2 to be with you again. I also want to welcome
3 the Council's newly appointed members who I am
4 sure will serve with great distinction.

5 The last time I was here, you
6 presented me with a report providing the
7 Council's extraordinarily comprehensive view
8 on the future of the global oil and gas
9 industry until the year 2030. And you did
10 that in the context of the global energy
11 system with related policy recommendations.

12 At the time, I said many positive
13 things about it, but I did not go so far as to
14 endorse it. This was because I had only just
15 received it, and I know that it's very unusual
16 for, particularly for a Washington policy
17 maker, which I guess I am now, but I wanted to
18 read it first. I did read it, and I agree
19 with it wholeheartedly.

20 It is notable not just for its
21 depth of analysis, and the diversity of
22 participants, but for its comprehensive look

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1 across industries and across technologies, as
2 well as for its proposed solutions, which
3 include increased efficiency and the
4 advancement of biofuels, and an acknowledgment
5 of the need for a global approach to reducing
6 carbon emissions.

7 Your recommendations are a good
8 benchmark, in my view, against which U.S.
9 policy developments can be measured.
10 Likewise, they highlight the need to develop
11 a national consensus on energy priorities.
12 That has really been very hard to achieve,
13 especially with regard to the development of
14 a domestic -- with the development of domestic
15 energy resources.

16 Over the last year, I have
17 personally sent, I want you to know this,
18 copies of the *Hard Truths* report to every
19 member of Congress, every governor, to my
20 cabinet colleagues, and to my energy
21 colleagues around the world. The *Hard Truths*
22 is an impressive piece of work that adds to

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1 our understanding of the global energy future
2 over the next 22 years. And in terms of world
3 history, 22 years might as well be tomorrow.
4 In my judgment, we have reached a point where
5 the old paradigm is being replaced by a new
6 energy reality.

7 Consider the following points.
8 Fundamentally tight market conditions have
9 caused dramatic increases in the price of oil.
10 A slowing of energy demand in OECD countries
11 has prompted OPEC to call for member states to
12 hold productions to 2007 quota levels. A
13 consensus now exists among industrialized
14 nations in evidence at the last G8 Summit,
15 that effective carbon management as relates to
16 climate change is needed. And, finally, we
17 continually identify new energy risks posed by
18 regional conflicts, acts of sabotage, and
19 resource nationalism.

20 These events, some of which have
21 occurred since your report was issued, come on
22 top of the trends identified in your report.

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1 We must, as your report suggests, diversify
2 our energy supplies, our energy suppliers, and
3 our energy supply routes. This will take
4 investment, education, effort, and above all
5 else, it will take time. And there is a
6 degree of urgency involved. For no matter how
7 fast we may wish to move, there are obstacles
8 to overcome.

9 World energy demand is only going
10 to grow, according to some estimates by 50
11 percent by the year 2030. To meet that demand
12 requires major changes, and trillions of
13 dollars in annual investment over decades,
14 some \$22 trillion in all, according to the
15 IEA, all around the world, and at all stages
16 of the energy cycle.

17 Even in the best of circumstances
18 you could not raise that much money overnight.
19 To increase confidence that it can be raised,
20 we must take steps to insure that the global
21 investment climate is such that the necessary
22 capital can be found. This means we need

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1 better information, and more transparency.
2 We're pushing this through our support for the
3 Joint Oil Database Initiative, or JODI as it
4 is called in the trade, but increased
5 transparency alone is not enough. We must
6 accelerate the rate of global progress
7 concerning law and economics, as well as
8 property rights.

9 It is important that investors,
10 both institutional and individual, be
11 confident that their investments will be
12 protected after they have been made, rather
13 than confiscated, or nationalized.

14 Time is not our friend. We cannot
15 open up new areas to drilling tomorrow and see
16 producing wells in 30 days. As you know
17 better than anyone else, it takes time to
18 study the geology and to test, and make
19 decisions about the productive potential of a
20 particular parcel of land.

21 It takes time to create the
22 physical infrastructure needed to begin

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1 operations. This is why we must, as the
2 President has called upon Congress to do, we
3 must open up additional areas in and around
4 the United States to oil and natural gas
5 exploration.

6 To begin, Congress should follow
7 the President's lead and lift the ban on
8 drilling on the outer continental shelf.
9 America is the second largest natural gas
10 producer in the world, as well as the third
11 largest oil producer.

12 Our industries have pioneered the
13 technologies used in environmentally
14 responsible drilling. In my judgment, we can
15 produce oil and gas, and protect the
16 environment at the same time. We do not have
17 to choose one over the other.

18 It also reminds us that we must
19 raise the nation's level of energy literacy.
20 We must move beyond, and your report does a
21 lot in this regard, we must move beyond
22 conventional understandings of energy to a

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1 point where the American people better
2 understand what is involved in energy
3 production, as well as consumption.

4 It is up to us to convince the
5 country and the world of the significance of
6 the challenges, and of the realities of the
7 solutions. One way to do this is by showing
8 examples of our successes. I believe this
9 administration has made a lot of progress in
10 this regard. I like to say that the most
11 abundant source of new energy readily
12 available to us is that which we waste every
13 day through inefficiency.

14 By signing the Energy Independence
15 and Security Act, or EISA, in '07, about a
16 year ago, the President has set this nation on
17 a course to achieve fuel economy standards of
18 35 miles per gallon by the year 2020, an
19 increase of 40 percent that will save billions
20 of gallons of fuel, and again substantially
21 reduce greenhouse gas emissions.

22 The greatest opportunity for

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1 efficiency gains is in the utility sector. A
2 fundamental premise of our approach is that
3 efficiency does not need to come at the
4 expense of profitability. That is why we're
5 working to expand and accelerate support for
6 the National Action Plan for Energy
7 Efficiency, which recommends a comprehensive
8 set of energy efficiency measures that could
9 save \$20 billion annually on consumer's energy
10 bills.

11 We're also focusing on our
12 utility's biggest customers, the industrial
13 plants and manufacturing facilities, which are
14 critical to our nation's economic
15 competitiveness.

16 We, at DOE, have even partnered
17 with Disney on a campaign to encourage kids to
18 turn their electronic toys or their computers
19 off when they are not using them.

20 We're also mindful that the
21 federal government is the nation's largest
22 energy consumer. As such, we feel a special

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1 responsibility to lead by example through
2 smart and efficient energy management. The
3 President issued an Executive Order last year
4 directing all federal agencies to cut their
5 energy consumption by 30 percent.

6 I committed the Energy Department
7 to meet or exceed this mandate through our
8 Transformational Energy Action Management, or
9 our TEAM, initiative. Through TEAM, we expect
10 to realize at least a 20 percent reduction in
11 energy intensity, and insure that new on-site
12 renewable generation accounts for 4 percent of
13 our energy production.

14 Renewable energy plays a big part
15 in our effort. Just last week, I cut the
16 ribbon on a new photovoltaic solar array
17 located on the roof of the Department of
18 Energy on the Forrestal Building, one of the
19 largest of its type in the Washington, D.C.
20 area.

21 Our investment now in solar power
22 will pay significant dividends over time in

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1 the larger energy and environmental picture.
2 Many of our efforts, including President
3 Bush's Solar America Initiative, are focused
4 on getting solar costs down. And I think we
5 have seen some success here. Over the last
6 seven years, installed PV capacity in the
7 United States has grown at the rate of 30
8 percent per year.

9 With regard to wind, for the last
10 three years in a row, the United States wind
11 power generation capacity has experienced the
12 fastest growth in the world. This trend we
13 are very proud of, and we intend to continue
14 supporting it.

15 And in an area I am particularly
16 excited about, the United States has invested
17 well over \$1 billion to spur the growth of a
18 robust sustainable biofuels industry. Our
19 investments advance our national goal of
20 making cellulosic biofuels cost competitive
21 with corn ethanol by the year 2012, and
22 reducing America's gasoline consumption by 20

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1 percent within a decade.

2 This has the potential to lower
3 greenhouse gas emissions at the tail pipe by
4 up to 85 percent, and thereby significantly
5 reduce carbon emissions from our
6 transportation sector.

7 We're also working to make it
8 possible to use more coal, mindful of our
9 concerns about climate change. We founded the
10 Carbon Sequestration Leadership Forum, or the
11 CSLF, to promote carbon sequestration and
12 storage around the world, and are supporting
13 large-scale storage projects in Canada, in
14 Algeria, and in Norway, in an attempt to
15 leverage the CSS research.

16 We started regional carbon
17 sequestration partnerships that are at work in
18 42 states here in the United States, four
19 Canadian provinces, and with over 350
20 organizations that are almost as diverse as
21 the membership of the MPC.

22 America has also taken a global

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1 leadership role in carbon capture and
2 sequestration. The G8 leaders recently called
3 for 20 large-scale CCS projects. DOE
4 currently has seven underway. We expect to
5 have three more through our restructured
6 FutureGen and Clean Coal Power Initiative
7 programs. So the United States is supporting
8 ten of the twenty projects called for by the
9 G8. And, of course, global concerns about the
10 rise in fossil fuel prices, and global climate
11 change are driving renewed interest in the use
12 of commercial nuclear power.

13 As the only large-scale cost-
14 effective, fully developed, readily
15 applicable, and carbon-free system for power
16 generation that is currently available,
17 nuclear power is very much a part of our
18 future, in my judgment. By streamlining the
19 permitting process, through loan guarantees,
20 through risk insurance, through the filing of
21 the applications to open Yucca Mountain, the
22 Yucca Mountain waste facility, as well as the

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1 Global Nuclear Energy Partnership, we believe
2 we are sparking a global renaissance in
3 commercial nuclear power, and the numbers of
4 new projects that are on the books seem to be
5 bearing that statement out.

6 But our work expanding the
7 physical infrastructure of the global energy
8 cycle must not neglect the needs of its
9 intellectual infrastructure. Our intellectual
10 infrastructure simply has to be replenished.
11 A majority of the nation's skilled scientists
12 and engineers, and technical workers will soon
13 reach the retirement age. Some of us, like Dr.
14 Raymond and myself, are well beyond the
15 retirement age. We do not have replacements
16 for these folks, certainly not at the levels
17 necessary to make the quantum leap in energy
18 production, the trend lines indicate that are
19 required. We must devote time and energy to
20 education to insure that a sufficient number
21 of the world's best and brightest minds have
22 the incentive to choose science or engineering

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1 as their career.

2 The President has taken action in
3 this regard through is American
4 Competitiveness Initiative, which he first
5 proposed in 2006, to grow the budget for basic
6 physical science research, and fund an
7 expansion of math and science education in the
8 nation's secondary schools.

9 If enacted by Congress, as the
10 President has proposed, the ACI will insure
11 that the United States continues to lead the
12 world in opportunity, in innovation by
13 providing more than \$136 billion over 10 years
14 to increase investments in research and
15 development, to strengthen education, and
16 encourage entrepreneurship and innovation.

17 Taken together, all these efforts
18 will, in my judgment, lead us down the road to
19 a prosperous energy secure future. So I want
20 to suggest that we embark on a mission to
21 educate the public about the facts of this new
22 energy reality. Your report is a vital

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1 initial step in that campaign.

2 So my final challenge to you is
3 two-fold. First, the *Hard Truths* report
4 identified a number of topics on which the
5 Council may wish to provide additional
6 insights to inform public policy decision
7 making. These include energy infrastructure,
8 energy financing, prospects for U.S. oil and
9 gas shale development, and the impact of
10 climate change on global energy systems.
11 Therefore, I ask that the Council undertake an
12 effort to identify several high-value, high-
13 impact topics that could be discussed with the
14 next energy Secretary. I have greatly
15 appreciated the Council's advice, and I
16 believe that my successor will, as well.

17 Second, we must engage in a
18 campaign to elevate energy literacy, to make
19 people better, more effective energy
20 consumers, and increase their understanding of
21 what is at stake. And while we cannot place
22 artificial political limits on the menu of

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1 alternatives that can be employed to make this
2 nation and the world more energy secure, I
3 believe that history will judge us harshly if
4 we do so. If, however, we look to technology,
5 to the very American spirit of invention and
6 discovery, then the possibilities before us
7 are limitless. And America, as it has always
8 done in its 232 history, will take up the
9 challenge, and will ultimately prevail. Thank
10 you very much.

11 (Applause.)

12 CHAIR RAYMOND: Thank you, Mr.
13 Secretary. He's open to some questions or
14 comments, if any of the members have any.

15 Sam, I'd be interested, if you
16 could tell us anything about how your
17 colleagues around the world have reacted to
18 this report.

19 SECRETARY BODMAN: I have not
20 heard anything negative from any place in the
21 world about this report. And I've been very
22 pleased with the response, and what I said in

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1 my remarks here really, in some measure, were
2 a reflection of what I've heard.

3 Before I came to Washington, I was
4 a school teacher. I started out life as a
5 school teacher, and I was always very worried
6 when I finished a lecture or a speech, and
7 there were no questions. I came to learn that
8 in Washington, I mean, the reason I was
9 concerned was that that meant I hadn't
10 stimulated the students to think about
11 whatever the questions might be. I've learned
12 since my time in Washington that it is really
13 good to have no questions.

14 (Laughter.)

15 SECRETARY BODMAN: And so with
16 that, I will bid you adieu. Thank you.

17 (Applause.)

18 CHAIR RAYMOND: Our next item of
19 business this morning is to receive an update
20 on the NPC report, "Facing the Hard Truths
21 About Energy." That report, which you
22 approved at the July 2007 NPC meeting, was

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1 prepared at the Secretary's request, and
2 provided findings on global energy supply and
3 demand, and recommended energy policy
4 strategies for the United States. Interest in
5 and reaction to this report has exceeded all
6 expectations, as you will hear.

7 In expressing your appreciation to
8 the Council for this report last May, Mr.
9 Secretary, you recognized the constructive
10 dialogue it has and continues to stimulate,
11 and expressed your ongoing interest in
12 feedback received.

13 Consistent with this interest, the
14 study's leaders agreed to a review of the
15 significant forecast events and government
16 actions since the report's release, and their
17 implications for the report's findings and
18 recommendations.

19 Key participants from the 2007
20 study were reconvened to conduct a one-year-
21 later update, and the results of which were
22 sent to all members of the Council early last

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1 week. The study group leaders will present an
2 overview of their findings this morning. An
3 integral part of their update is a draft
4 transmittal letter to Secretary Bodman, a copy
5 of which is in your folders.

6 Now I'd like to call on Alan Kelly
7 to lead off the presentation of the update.
8 Alan.

9 MR. KELLY: Thank you, Lee. Good
10 morning, ladies and gentlemen. It's a great
11 privilege for me to be here this morning
12 alongside my colleagues from the Study
13 Leadership Team, representing the hundreds of
14 people who participated in the original NPC
15 report, "Facing the Hard Truths About Energy."

16 Last year when we sought the
17 approval of this NPC membership for the study
18 recommendations, I quoted the following
19 comment from the opening paragraph of the
20 report. "The American people, indeed people
21 all over the world, are very concerned about
22 energy, its availability, reliability, cost,

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1 and environmental impact. In the United
2 States, energy is also the subject of urgent
3 policy discussions, but energy is a complex
4 subject touching every part of daily life, and
5 the overall economy, involving a wide variety
6 of technologies, and deeply affecting many
7 aspects of international relations. And the
8 facts about energy are not widely understood."

9 Reflecting upon these words one
10 year later, I think it's fair to say that most
11 of those observations remain true. The work
12 of the NPC study team over almost two years
13 was a massive undertaking involving a broad
14 and diverse group of stakeholders, and we
15 would like to thank all the NPC members who
16 lent their expert resources to the project to
17 help us provide a better understanding of the
18 complex facts about energy.

19 This morning, the Study Leadership
20 Team will provide an assessment of the impact
21 of the report some 12 months since its
22 publication, and reflect upon how one year

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1 later our original conclusions and
2 recommendations look from today's vantage
3 point.

4 First, let me remind you of the
5 basis for the study. The true origin dates
6 back to June 2005, when Secretary Bodman
7 delivered an insightful speech to this annual
8 NPC gathering. He outlined his views on the
9 considerable challenges facing the oil and gas
10 sector, noting that "perspectives on the
11 future vary widely", and commenting that there
12 are numerous areas where the NPC's expertise
13 might be brought to bear in informing and
14 shaping the energy debate.

15 Secretary Bodman posed three
16 questions posted here on the screen to the
17 National Petroleum Council, establishing the
18 basis for the 2007 study. The ultimate focus
19 of this report was on developing
20 recommendations for the United States
21 regarding future oil and gas supply and
22 demand. However, to form a sound basis for

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1 recommendations, we had to examine not only
2 global oil and gas, but all alternative forms
3 of energy, as well as implications for
4 security and the environment.

5 The team feels we have succeeded
6 in our goal to inform the energy debate.
7 Compared to any other study in the NPC's proud
8 history, interest in this report has been
9 unprecedented. We also hope that this report
10 will stimulate future administrations to turn
11 to the National Petroleum Council for advice
12 and guidance on energy matters of national and
13 global importance.

14 The study is available for free
15 download from the NPC's website, and over 1.5
16 million downloads have been made. In
17 addition, over 8,200 hard copies of the report
18 have been distributed worldwide, and in a
19 demonstration of the commitment of study
20 participants to communicating the messages,
21 over 180 presentations and briefings have been
22 made to opinion leader groups all over the

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1 world, to literally thousands of people.

2 The Executive Summary has been
3 translated into six languages besides English,
4 Arabic, Chinese, French, Japanese, Russian,
5 and Spanish. All versions are accessible on
6 the website, and several copies are available
7 in hard print, too, available from the NPC.

8 There is no doubt that the public
9 energy debate has been high profile over the
10 past 12 months since we published this report.
11 Let's briefly review some of the key events
12 and trends which have occurred since the
13 report was published.

14 First, crude oil prices have been
15 volatile, rising dramatically to a high over
16 \$147 a barrel on July the 11th, before
17 declining to today's levels. U.S. natural gas
18 prices also peaked in early July. And high
19 energy prices have had an impact on demand.
20 The EIA's most recent analysis shows U.S.
21 gasoline demand down year-on-year by almost 3
22 percent, the first decline in many, many

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1 years. Above ground issues have been
2 continuously in the news. Examples include
3 conflict in the Middle East, strikes, militant
4 attacks in producing countries, resource
5 nationalism and transit concerns, nuclear
6 program tensions, and hurricanes on the U.S.
7 Gulf Coast. Climate change discussions
8 continue, and the number of proposals to deal
9 with carbon has proliferated.

10 The U.S. Energy Independence and
11 Security Act was signed into law on December
12 the 17th of 2007. And, as you heard, included
13 a number of energy efficiency initiatives.
14 And as I said earlier, energy continues to be
15 a high-profile topic in the political debate.
16 Unfortunately, as you'll hear from Rob, the
17 debate is often superficial, characterized by
18 a deep misunderstanding of the scale, of the
19 time lines, and of the infrastructure
20 associated with the energy sector.

21 As Lee mentioned, earlier this
22 summer the study leaders agreed to a review of

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1 the significant forecast's events and
2 government actions since the report's release,
3 and their implications for the report's
4 findings and recommendations. Key
5 participants from the study team were
6 reconvened to conduct the one-year-later
7 update, the detailed results of which were
8 sent to all members of the Council early last
9 week.

10 Before handing over to the team,
11 let me start by providing a high-level
12 overview of the findings. Based on the more
13 recent studies we reviewed, and consistent
14 with our findings from a year ago, we observed
15 that demand for fuel and power continues to be
16 predicted to grow significantly, requiring
17 increases in efficiency, and expansion of all
18 economic energy sources.

19 There are increasing risks to the
20 expansion of conventional liquid supplies.
21 Recent projections include significant
22 additions of unconventional liquid supply.

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1 Recent studies report a larger oil and gas
2 resource endowment. Exploration and
3 production expenditures have increased
4 dramatically. Growing pressure on cost and
5 the availability of project resources is
6 hindering the ability to expand energy
7 production capability. And pressures to
8 address carbon emissions and energy security
9 are increasing.

10 Our first conclusion is that to
11 meet accumulating risks, all the
12 recommendations of the 2007 report remain
13 valid, and require implementation with
14 increased urgency.

15 Now, let's walk through these
16 points in a little more detail. We'll start
17 this update with a look at demand, then
18 proceed with observations from supply,
19 geopolitics, and technology. So let me hand
20 over to Jim Burkhard for an update on demand.

21 MR. BURKHARD: Thank you, Alan.
22 The first hard truth is that fossil fuels,

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1 coal, oil, and natural gas will remain
2 indispensable to meeting projected growth and
3 world energy demand. The member countries of
4 the Organization for Economic Cooperation and
5 Development, the OECD, have historically been
6 identified as developed countries, countries
7 outside of the OECD, non-OECD countries have
8 historically been identified as developing
9 countries.

10 As we noted last year, whether
11 these labels are still appropriate is a
12 question, but in any case they do provide a
13 useful grouping when looking at energy demand
14 trends. And as incomes rise, particularly in
15 non-OECD countries, so do living standards.
16 This means lower infant mortality, longer life
17 expectancy, and higher energy demands.

18 Recent projections confirm the
19 strong relationship between economic activity
20 and energy use. The original study observed
21 that increasing economic activity and
22 population growth in non-OECD countries would

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1 be the primary drivers of increased global
2 energy demand.

3 Over the last year, we've seen
4 more evidence of this. The most recent
5 projections suggest that non-OECD energy
6 demand will likely exceed OECD demand as early
7 as this year. This is earlier than most
8 projections considered by last year's study.

9 The EIA's 2008 International
10 Energy Outlook indicates that non-OECD
11 countries are anticipated to consume 5 percent
12 more energy than OECD countries by 2010, and
13 43 percent more by 2030. Reinforcing this
14 original hard truth updated projections still
15 show that fossil fuels must provide the
16 majority of energy through 2030. For example,
17 the 2006 EIA International Energy Outlook
18 projected that 87 percent of the energy
19 consumed in 2030 would come from fossil fuels.
20 The 2008 EIA International Energy Outlook
21 projects that percentage to be 86 percent, so
22 still very important. Next slide, please.

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1 Reinforcing the role of the non-
2 OECD countries in future energy demand, we
3 show here the 2005 actual energy demand
4 figures, and the 2030 projection from the EIA
5 for the OECD and non-OECD countries by primary
6 fuel. Here are some key points from this
7 chart.

8 First, as you see, most of the
9 demand increase from 2005 to 2030 is in non-
10 OECD countries. You will also see that oil
11 use is nearly flat in the OECD, and that coal
12 use increases substantially in non-OECD
13 countries. This coal increase will have
14 substantial implications for greenhouse gas
15 emissions and the degree of mitigation
16 required. This projection is not a carbon
17 constraint projection.

18 Renewables will have an important
19 and growing role in satisfying world energy
20 demand. However, despite the rapid annual
21 percentage growth in renewables, they are
22 starting from such a small base that they will

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1 not be able to replace very large amounts of
2 fossil fuel in this time frame.

3 Now, let's turn to Don for the
4 next *Hard Truth*.

5 MR. PAUL: Thank you, Jim. From
6 the 2007 report, the second *Hard Truth* was the
7 world is not running out of energy resources,
8 but there were seen to be accumulating risk to
9 the continuing expansion of oil and natural
10 gas production from conventional sources. And
11 that these risks created the challenges to
12 meeting projected demand in the future.

13 The one-year look-back affirmed
14 this key finding of the 2007 report. However,
15 we saw increased accumulation, increased
16 clarity around accumulation of these risks.
17 As with the 2007 report, the accumulating
18 risks are multi-dimensional, economic,
19 technical, geopolitical, and environmental.
20 We also saw from the look-back with recent
21 reports from the U.S. Geological Survey that
22 there are increased resource assessments,

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1 particularly for the Arctic and the
2 continental U.S., including unconventional
3 resources. But we also see that even with our
4 investment, increasing global liquid supplies
5 over the time frame will be challenging to the
6 availability and costs associated with major
7 project developments.

8 We also see that constraints to
9 the expansion of first generation biofuels are
10 more apparent, increasing the requirements for
11 significant additions from second generation
12 biofuels to meet supplies in the future.

13 As we go through the supply
14 section, we will look at a select set of data
15 slides that emphasize a few key points, and
16 note that there are more available on line in
17 an extended slide deck, and that there was
18 also in preparation an extensive topic paper
19 on supply, which will delve into many of these
20 topics in significant detail.

21 This slide visualizes the core
22 challenge for the liquid supply system. What

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1 is shown at the top of the plot is the IEO
2 2008 demand range estimates for liquid supply
3 out to 2030. What you also see at the bottom
4 end of the plot forming a wedge is the
5 production decline from existing production
6 capacity. These estimates range here are
7 shown as a range from 4 to 7 percent. That
8 wedge, that spread is required new production
9 capacity. And note that in 2030, even with
10 conservative estimates, that is the low end of
11 the demand range, and the more modest, 4
12 percent decline rate still produce a spread of
13 nearly 70 million barrels a day by 2030. Where
14 is this going to come from? Go to the next
15 layover.

16 And what we see is that this
17 really -- please back up. Thank you. What we
18 see is three key components, conventional
19 production additions from OPEC, conventional
20 production additions from non-OPEC sources,
21 and a growing and increasing supply of
22 unconventional liquids production, including

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1 biofuels. All three components are going to
2 be required over the next 22 years to meet the
3 substantial spread between demand and
4 underlying decline of existing production.
5 Delivering this capacity will require
6 substantial contributions of capital,
7 technology, and human resources. Next slide,
8 please.

9 This slide provides an historical
10 perspective on the recent dramatic increases
11 in both oil price, and companion investments,
12 and exploration and production expenditures.
13 What you see on this slide in underlined blue
14 is world oil production capacity. This
15 extends from 1970 to the current data. This
16 is historical data, not projections. What we
17 also see plotted in yellow is oil price in
18 2008 dollars over that time frame. And in the
19 orange, a plot of the E&P expenditures.

20 A couple of key points. Scale,
21 time, and complexity of major developments,
22 along with the sheer scale of the global

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1 system mean that years are often required to
2 increase production, except in areas where
3 immediate access can be connected to
4 infrastructure.

5 Most importantly, the delays
6 introduced into the system through either
7 technical risk, financial risk, or political
8 risks, as we saw in the last slide, increase
9 the magnitude of the challenge by pushing the
10 requirements for the system further to the
11 right, and further into that opening wedge
12 between demand and underlying decline rates.

13 Now on to the third *Hard Truth*.
14 The third *Hard Truth* from the 2000 report
15 stated that to mitigate these risks to the
16 conventional supply expansion of all economic
17 energy sources will be required, coal,
18 nuclear, biomass, and other renewables, and
19 the unconventional oil and natural gas. Each
20 of these sources, of course, faces significant
21 challenges.

22 Although not strictly a physical

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1 supply source, as we reported in the 2000
2 report, increases in energy efficiency are
3 essential to addressing the supply challenge
4 to meeting demand. Diversification is
5 obviously essential, particularly with respect
6 to unconventional sources for liquids, and
7 unconventional production of gas.

8 For the U.S., in particular,
9 access to developable resources will be
10 critical to augmenting and moderating
11 production declines. Pursuing multiple energy
12 sources is essential, but we see potential
13 challenge as a strain to developing resources,
14 which involves significant infrastructure
15 issues, and success will require a
16 collaborative effort between government,
17 industry, and the public. Next slide, please.

18 As we said, an important part of
19 energy supply and demand is the efficiency of
20 energy and use, as illustrated here. Energy
21 intensity is the energy used per unit of
22 economic output. To change the energy

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1 intensity, as shown here between the 2005
2 energy intensity forecast and the projected
3 energy consumption based on updated forecasts
4 of energy intensity in the EIA 2008 report,
5 shows the opportunity is significant. But to
6 make a change in energy intensity requires
7 both a change in the technical efficiency and
8 use, but equally importantly, perhaps more
9 importantly, a change in the mix of activities
10 and the way energy is used in society. Go on
11 to the next slide.

12 One of the most striking
13 successes, a combination of market prices,
14 access to resource opportunities, and the
15 application of advancing E&P technology at
16 scale has been the development of
17 unconventional natural gas in the United
18 States. What is shown here are the changes in
19 the projections from the 2006 AEO report,
20 which was the basic data used in the 2007 *Hard*
21 *Truths* report, and what we see in the most
22 recent development showing a significant

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1 upward rise in the U.S. unconventional gas
2 production, with a companion effect, of
3 course, to reduce the anticipated required
4 U.S. LNG imports.

5 I think the key messages from this
6 are that combination of market forces, the
7 continuing advancement of technology that the
8 E&P industry has made for decades, combined
9 with access to resources for the U.S. can add
10 material production to the oil and gas supply.

11 Continuing on this theme is
12 understanding the role that resources and
13 restrictions have on U.S. oil and gas
14 opportunities. This figure was shown in the
15 2007 report, but has been updated with the
16 light purple areas noted from recent USGS
17 studies that provide opportunities for
18 unconventional oil and gas production that
19 were not shown in the original report.

20 Three key points here. There's
21 been a growth in U.S. resource opportunities.
22 Two, deliverability requires access to these

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1 resources. And, three, that the time frames
2 often discussed vary considerably between
3 lower 48 on-shore activities, OCS
4 developments, and ultimately Arctic Alaska
5 development.

6 Let me wind up talking about power
7 generation growth. First and foremost, growth
8 in all forms of power generation are expected.
9 Renewables continue to grow underpinned by
10 steady improvements in technology and major
11 increases in R&D, and venture capital
12 investments. Global energy policy continues
13 to provide significant financial incentives,
14 which are an important contributing factor to
15 the growth in renewable power. Although
16 double digit growth rates are fully expected
17 to continue, in aggregate the total
18 contribution will continue to be small because
19 of its starting base.

20 Geothermal and hydro power, which
21 are in some ways the "traditional renewable
22 sources", continue to grow, but at much lower

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1 rates than for solar and wind. Nuclear
2 renaissance, as Secretary Bodman mentioned, is
3 seen with a growth of new projects under
4 review, and license applications, 15 new
5 plants in the United States, out of a total of
6 439 plants in the world, currently they
7 generate 15 percent of electric capacity, even
8 only about 2 percent of that is in the non-
9 OECD sector.

10 Finally, let me finish with a
11 discussion of coal. In the 2007 report, we
12 emphasized that coal had a special role with
13 respect to energy supply and the challenges of
14 carbon. The U.S. and China, major coal users,
15 major resource holders, and as we have seen in
16 the forecast in 2008, coal continues to grow.
17 Scale and carbon are the challenge of coal
18 going forward.

19 And with that, would you like to
20 start on geopolitics, Frank?

21 MR. VERRASTRO: Thanks, Don. Much
22 in the same way that Don and Jim's group, the

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1 supply and demand approach the update for
2 2008, we did the same in geopolitics. So we
3 looked at the characteristics of the current
4 market, and identified those as increasing but
5 uneven demand, tight markets, limited spare
6 capacity, higher and volatile prices,
7 increased investment and geopolitical risks, and
8 this new issue of addressing climate change,
9 and the policies that address climate change.

10 We'd suggest that we're doing that
11 now against a backdrop that's also changing,
12 so the energy landscape is changing. We have
13 emerging new players. They have different
14 leverage, different business practices. We
15 think that they're bringing in new rules to
16 play. They're not afraid to use that leverage
17 in certain areas. And we're confronting these
18 challenges with institutions that may be not
19 totally up to the task of dealing with the
20 change.

21 So when we looked at the *Hard*
22 *Truths* from the 2007 report, since this is

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1 Washington, we're in a political year, we
2 decided that the first *Hard Truth* on energy
3 independence was one that was worth restating.
4 What we need is strategy, effective strategy,
5 not political sloganeering. And while we
6 certainly understand the political attraction
7 to energy independence and how well it plays
8 in the polls, both Dan and I were fortunate
9 enough to appear last week at the Energy
10 Summit, and we brought up this issue of energy
11 independence.

12 It is not only contrary to U.S.
13 foreign policy objectives, I would argue, but
14 also violates our treaty obligations, and also
15 our trade flows. It's an easy thing to do and
16 it's a slogan, but it won't get us where we
17 need to be.

18 Having said that, there are also
19 other issues that we've seen emerge in the
20 last year, and these include the growing
21 revenue transfers, the sovereign wealth runs,
22 and this plays into the changing landscape,

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1 some of these countries now are able to self-
2 finance, they don't need things like the World
3 Bank and the IMF. And with that comes
4 absolutely new rules.

5 We have subsidies for energy use
6 in certain demand areas with growing
7 economies, and as Jim said, in the non-OECD,
8 in the world, as a whole, 85 percent of
9 world's energy demand is filled with fossil
10 fuels. In the non-OECD world, it's over 90 in
11 coals, which has enormous implications for
12 climate change.

13 We have an improved understanding
14 of food and fuel, and the interplay between
15 food and fuel. And in our study, we actually
16 put economics, foreign policy, and
17 environmental objectives to say that if you're
18 going to have a balanced policy, you have to
19 find your way to the middle of the triangle.
20 And then we talked about the heightened sense
21 of accelerating above ground issues. And we
22 viewed that as everything from access,

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1 commercialization, commerciality, investment
2 risk, sabotage, transportation, and climate.

3 When we put the chart up, and part
4 of this was in the 2007 study, as you go
5 across the globe, the three issues that we
6 chose for the United States were obviously the
7 access issue in a political year, this issue
8 of how you deal with policies that affect
9 climate change, and the hurricanes, because
10 storms in the Gulf, we had them in 2004, 2005,
11 and again in 2007. As of last night, we still
12 have 97 percent of our oil offline, about 80
13 percent of our natural gas, and about three
14 million barrels a day refining capacity. In
15 aggregate, that's 20 million barrels a day of
16 production in a tight global market.

17 When you move eastward on the
18 globe, you can find that MEND, the Moving for
19 the Emancipation of the Niger Delta, has
20 increased its militant activity in Nigeria.
21 We have the ongoing concerns about transit
22 routes in the caucuses, Russia's role and

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1 resource nationalism in both Venezuela, as
2 well as in Russia. And then we look to Asian
3 markets, and this issue of chill points,
4 sabotage and piracy concern. So the
5 challenges are not new, and they're certainly
6 not going away.

7 And for technology, let me turn it
8 over to Rod.

9 MR. NELSON: Thank you, Frank. A
10 little over a year ago, we reported that the
11 demographics of our industry led to the fifth
12 of the *Hard Truths*; that being that a majority
13 of the U.S. energy sector workforce, including
14 skilled scientists and engineers, is eligible
15 to retire within the next decade. The
16 workforce must be replenished and trained.

17 Over the past year, there has been
18 an increased awareness of this issue. And as
19 you can see from this plot, if you focus on
20 the freshmen students plotted here in yellow,
21 you see that enrollments in petroleum
22 engineering have doubled in the past couple of

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1 years. And starting salaries are up.
2 However, academic capacity may be limited by
3 faculty numbers, shown here in the lowest
4 curve in blue, which are flat to down.

5 The industry and professional
6 societies are collaborating on ways to provide
7 professors of practice, or recent retirees who
8 may be loaned to universities to increase
9 capacity. This effort will need to be
10 sustained over a significant period of time to
11 replace the retiring workforce.

12 The sixth of the *Hard Truths* spoke
13 to greenhouse gas emission concerns. We said
14 policies aimed at curbing carbon dioxide
15 emission will alter the energy mix, increase
16 energy-related cost, and require reductions in
17 demand growth. Clearly, public concern over
18 CO2 emissions has increased over the past
19 year. But as Alan mentioned, understanding of
20 the scale, time lines, infrastructure, and
21 cost, while improved, is still lacking. This
22 was borne out in the interest on this subject

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1 in our many presentations of the *Hard Truths*.

2 Carbon emission constraints,
3 uncertainty has hindered construction of new
4 domestic fossil fuel power plants,
5 particularly conventional coal, increasing the
6 risk of a supply gap. Yet, as you've seen,
7 most global forecasts show a growing use of
8 coal, so CO2 emission reduction will require
9 commercially available carbon capture and
10 storage.

11 Progress continues to be made on
12 demonstrating CCS with a number of projects
13 starting or under serious consideration, and
14 with the recent EPA proposal for carbon
15 storage rules. But the lack of a legal
16 regulatory framework or economic drive still
17 restricts implementation on a significant
18 scale.

19 Last year I gave you some rules of
20 thumb on the scale of this issue. However,
21 more needs to be done to help educate the
22 public. Listed on this slide to highlight the

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1 magnitude of the effort required, and to give
2 people a sense of the scale are actions that
3 can cut annual carbon emissions by one billion
4 metric tons. Let me highlight just a few of
5 these for you.

6 The first one says we could build
7 a little over 1,000 zero emission 500 megawatt
8 coal-fired power plants, including full carbon
9 capture and sequestration in lieu of the same
10 number without CCS, or we could deploy one
11 billion new cars, achieving 40 miles per
12 gallon versus 20 miles per gallon. Finally, we
13 could convert a currently barren area 20 times
14 the size of Iowa's farmland to biomass
15 production. Each of these will achieve one
16 gigaton of carbon reduction.

17 Now, to put it in perspective,
18 many scenarios out there as to what we should
19 try to achieve in terms of emissions
20 reductions going forward. One that's talked
21 about is to return to 2005 emission levels by
22 2050. To achieve that, we would have to

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1 achieve a one gigaton carbon reduction by
2 2020, and seven gigatons by 2050. Obviously,
3 this is a big challenge. And as with the rest
4 of the *Hard Truths*, the solution is not to
5 focus on any one of these, but to work on all
6 of them.

7 Let me turn it back to Alan to
8 conclude.

9 MR. KELLY: Thank you, Rod. In
10 summary, you'll recall that the 2007 *Hard*
11 *Truths* study identified 48 detailed
12 recommendations in five core strategy areas.
13 The NPC team remains committed to these
14 strategies to assist markets in meeting the
15 energy challenges to 2030 and beyond. We're
16 confident that the prompt adoption of these
17 strategies, along with a sustained commitment
18 to implementation will promote U.S.
19 competitiveness by balancing economic security
20 and environmental goals.

21 To summarize the strategies, the
22 United States must moderate growing demand by

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1 increasing efficiency of transportation,
2 residential, commercial, and industrial uses.
3 The United States must expand and diversify
4 energy supply from clean coal, to nuclear, to
5 biomass, other renewables, oil and gas,
6 conventional and unconventional. Must
7 moderate oil and gas production and decline to
8 the application of technology, and increase
9 access to new resources.

10 The United States must strengthen
11 global energy trade, and investment,
12 broadening the dialogue with producing and
13 consuming nations to improve global energy
14 security. The United States must enhance
15 science and engineering capabilities, creating
16 long-term opportunities for research and
17 development in all phases of the system. And
18 if CO2 emissions reductions are considered,
19 the United States must develop a framework for
20 carbon management to establish transparent,
21 predictable, economy-wide costs, and a legal
22 regulatory structure to enable carbon capture

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1 and sequestration.

2 There is clearly no single easy
3 solution to the multiple challenges we face.
4 All of the NPC recommendations must be pursued
5 with renewed urgency.

6 To conclude, let me please remind
7 you that this brief slide set, and an extended
8 version with more detailed analysis will be
9 available on the NPC website, and also let me
10 once again offer thanks to all those who
11 supported this great initiative, to the member
12 organizations of the NPC, and the staff at the
13 Department of Energy, and to all those from
14 outside the National Petroleum Council, both
15 in the United States, and in many countries
16 around the world, who gave their time and
17 expertise so willingly. Thank you.

18 CHAIR RAYMOND: Thank you, Alan.
19 The subcommittee and the study participants
20 have provided a valuable and important update
21 that further informs the energy debate,
22 validates our previous findings, and stresses

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1 the urgency of fully implementing all of our
2 recommendations. Clearly, our central message
3 remains, there is no single easy solution to
4 the global challenges ahead. We need all
5 economic, environmentally responsible energy
6 sources to assure adequate and reliable
7 supply.

8 I believe that the Council should
9 submit the results of the update activity to
10 Secretary Bodman as an appropriate response to
11 his May 14th letter.

12 Before I open the meeting to
13 questions and comments from the floor, I would
14 like to ask my Committee Vice Chairs for any
15 comments they may wish to add. Dan, Dave?

16 MR. YERGIN: I'd like to say
17 something. What I'd like to say is to add a
18 little bit about the impact of this study.
19 Those of you who have had a chance to read the
20 "Voice of the Marketplace", which is a history
21 of the NPC, will know that this organization
22 has had continuing impact in bringing

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1 knowledge and understanding to bear on
2 critical decisions involving energy going back
3 to its establishment by President Truman in
4 1946. But I think this study really does
5 establish, obviously, a new benchmark in terms
6 of comprehensiveness, the richness of the
7 material, and also the impact.

8 In 1946, you couldn't measure
9 downloads from the internet very easily. We
10 know something about the unpredictability of
11 energy demand, but I think with this study
12 we've also learned something about the
13 unpredictability of demand for energy
14 knowledge.

15 As Marshall knows very well, when
16 we put the -- released the study and put it up
17 on the internet, we thought there would be
18 some response. What we didn't realize is that
19 within about 15 minutes, the first server
20 would crash, the second server would crash,
21 and fortunately there was a third backup
22 server that came into effect, because the

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1 response and the interest in this was so
2 overwhelming. And the fact of having a
3 million and a half downloads is, I think, an
4 impact that none of us who were involved in
5 this possibly expected. And it shows that
6 hunger for knowledge.

7 I think the other points that
8 strike me about this is, in a sense has been
9 emphasized, *Hard Truths* is plural, and there
10 are five of these interrelated truths, that
11 this is not a partial study, either in terms
12 of its content, or in terms of its point of
13 view. And I think that's reflected in this
14 update, and really this look forward that we
15 have. It's clearly a great contribution in
16 itself in terms of its richness to the kind of
17 energy literacy that the Secretary spoke
18 about, provides a framework.

19 And I think in the unfolding
20 political debate that we see, as pointed out
21 this is a political season, everyone knows
22 that, but that this study has actually

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1 contributed to a more balanced, a more
2 ecumenical approach by its emphasis that it's
3 not either/or, but it is -- these come
4 together.

5 Just one -- and I think that is a
6 continuing contribution, and why the update is
7 very important, and very timely that we're
8 doing it right now looking really into the
9 next year, and next administration.

10 I think one final point that
11 strikes me is on the demand side. The
12 Secretary described demand as the most
13 abundant energy resource, the one that we have
14 closest, quickest at hand. And I think we've
15 seen, in a way, a consensus about that
16 importance and its impact, and that it is
17 correlative to the supply side things that
18 have been talked about, and are extremely
19 important. And it's harder to get your hands
20 on, because it's not so concrete. But I think
21 that as making this one of the five truths,
22 along with the others, supply, and security,

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1 and so forth, that that's one of the lasting
2 contributions of the study. And so like
3 everybody who has been part of it, it's really
4 very grateful to the 350 people who
5 contributed to their time and effort to it.

6 CHAIR RAYMOND: Dave.

7 MR. O'REILLY: I would just, Lee,
8 like to see us continue the outreach effort.
9 This has been a great 180 briefings that have
10 been done. I think in the next six months,
11 particularly in the bridge to a new
12 administration we should continue to identify
13 interested parties, and continue that briefing
14 effort. Thank you.

15 CHAIR RAYMOND: Andrew.

16 MR. GOULD: Yes. I think we can
17 marry some of the different chapters here in
18 the outreach effort. And I think the one that
19 we need to marry quite quickly is to transmit
20 the energy literacy to the highschool students
21 who are about to make college choices, because
22 I'm not sure that even with enrollments

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1 improving, we're really catching their
2 imagination early enough about the importance
3 of the energy business. So I think that an
4 educational effort even before undergraduate
5 enrollment on the importance of energy would
6 be a good way to marry things.

7 CHAIR RAYMOND: Frank, do you have
8 any comment from John?

9 MR. VERRASTRO: Yes, thanks, Lee.
10 Just a couple of quick comments. John regrets
11 not being here today, obviously. For those of
12 you that know John Hamre, he's very expressive
13 and animated, and when he talks about this
14 study, his eyes light up and his arms move.
15 And he continues to tell me that he's
16 impressed by the resiliency of the
17 recommendations, and what a great idea it was
18 that we got involved in the study.

19 He has extremely high hopes that
20 the next administration, the next Congress
21 will look at this as a resource. We've had
22 sessions at CSIS with both the Obama group and

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1 the McCain group, discussion of the NPC study
2 has come up at length in both of those
3 discussions. And when the group of ten,
4 before it became the group of 20 plus
5 approached us about a month ago, both Senator
6 Chambliss and Senator Nelson asked for
7 recommendations, the first thing we did was
8 referred them to the NPC study, and sent about
9 20 copies to the Hill. So it continues to go
10 on, and I think the education part is very
11 valuable.

12 CHAIR RAYMOND: Thank you,
13 everyone. Are there any questions or comments
14 from the Council membership? I got the same
15 reaction you did, Sam.

16 (Laughter.)

17 CHAIR RAYMOND: Do I have a motion
18 to approve the sending of the transmittal
19 letter with the complete -

20 MR. HOLDITCH: I'd like to make a
21 comment. My name is Steve Holditch. I'm from
22 Texas A&M University, and there are no easy

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1 solutions. But there's one thing on that list
2 that is easy, and that's increased support for
3 science and engineering education. And in the
4 last year, I really haven't seen any change in
5 terms of support.

6 We can hire new faculty, Rod. The
7 faculty members are low because we don't have
8 money to hire new faculty, and so support for
9 science and energy, and engineering education
10 is something we could do. And the leaders of
11 the NPC who run many of the oil and gas
12 companies in the United States, and the
13 Department of Energy, if you decided you
14 wanted to do that one, that one is real easy
15 to do. And I would encourage you to take a
16 look at that.

17 And as far as Andrew's point, we
18 could do energy education at the highschool
19 level. In fact, my students do that right now
20 in our local community. But, again, there
21 needs to be an organization put in place to do
22 that on a broad scale. Thank you.

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1 CHAIR RAYMOND: Any other
2 comments? Do I have a motion to approve the
3 sending of the transmittal letter with the
4 complete slide deck to Secretary Bodman, and
5 the posting of these, and other update
6 materials on the NPC website?

7 (So moved.)

8 CHAIR RAYMOND: Do I have a
9 second?

10 (Second.)

11 CHAIR RAYMOND: Any comments? We
12 have a motion and second. All in favor.

13 (Chorus of ayes.)

14 CHAIR RAYMOND: I'm not going to
15 ask if anybody's opposed.

16 (Laughter.)

17 CHAIR RAYMOND: The update is
18 approved.

19 I'd like to thank the Vice Chairs
20 of the Committee and the Chairs of the
21 Subcommittee and Task Groups, and all the
22 other people numbering almost 1,000 who at one

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1 point or another participated in the study.
2 All of them have done an excellent job in
3 preparing the report, and on communicating its
4 findings and recommendations around the world,
5 and on this update.

6 With the work of the NPC Committee
7 on Global Oil and Gas now complete, it is my
8 pleasure to thank you all again, and
9 officially disband the Committee and all of
10 its study groups. Mr. Secretary, it is with
11 great pleasure that the NPC submits this
12 report update to you. We hope it will be
13 useful to you, this administration, and the
14 subsequent administration.

15 Before we turn to the
16 administrative matters of this morning's
17 agenda, I have an announcement for the benefit
18 of the press. About 15 minutes following the
19 meeting's adjournment, the Council and Study
20 Leaders will reconvene here at the head table
21 to respond to any of your questions.

22 Now, I would like to turn to the

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1 Council's finances. Chuck Davidson, Chair of
2 the NPC Finance Committee is out of the
3 country. Claiborne Deming will present the
4 Committee's report. Claiborne.

5 MR. DEMING: Thank you, Mr.
6 Chairman. The Finance Committee met yesterday
7 afternoon to review the financial condition of
8 the Council. A representative of Johnson
9 Lambert Company, our independent outside
10 auditors, was at the meeting to review their
11 draft audit report for calendar year 2007.

12 Based on this review, I'm pleased
13 to report that our accounting procedures and
14 controls received the highest marks. I'm also
15 pleased to report to you that the Council's
16 contingency fund has been restored to
17 approximately six months of expenditures.
18 This is in no small part due to the member
19 response to contribution requests, which
20 exceeded 95 percent in 2007.

21 As you may recall, the Committee
22 also met in late May, and recommended a

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1 calendar year 2008 budget in the amount of
2 \$4,056,000, the recommended member
3 contributions in the same amount to fully fund
4 this budget. In early June by ballot vote,
5 the Council membership unanimously approved
6 both recommendations. Yesterday we reviewed
7 2008 expenditures to-date, and projections to
8 year end. We anticipate ending 2008 in
9 excellent financial condition, as we did in
10 2007.

11 Also in June, Lee Raymond sent a
12 letter to all members requesting your
13 financial support. To-date the response is
14 even ahead of last year's record-setting pace.
15 However, if you have not yet responded, I
16 encourage you to do so as rapidly and as soon
17 as possible.

18 So thank you, Mr. Chairman. This
19 completes my report, and I move that it be
20 adopted by the Council.

21 CHAIR RAYMOND: Thank you,
22 Claiborne. Do we have a motion to adopt the

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1 report of the Finance Committee?

2 (So moved.)

3 CHAIR RAYMOND: Do I have a
4 second?

5 (Second.)

6 CHAIR RAYMOND: Are there any
7 further questions of the Finance Committee?
8 All in favor.

9 (Chorus of ayes.)

10 CHAIR RAYMOND: Thank you. Thanks
11 again, Claiborne. On behalf of the Council
12 members, we appreciate the work of the Finance
13 Committee.

14 Our other administrative report
15 this morning is from the Nominating Committee.
16 Ray Hunt chairs the Nominating Committee, but
17 was unable to be with us this morning. George
18 Alcorn will now present the Committee's
19 report.

20 MR. PALMER: I wish I was George
21 Alcorn.

22 CHAIR RAYMOND: Oh, okay. Palmer,

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1 you're going to do everything up here.

2 MR. PALMER: Well, I'm here today
3 as one of the many residents of Houston, Texas
4 without electricity. And I can tell you it
5 was a pleasure this morning shaving, and not
6 having to hold a flashlight in one hand.

7 (Laughter.)

8 MR. PALMER: The National
9 Petroleum Council's Nominating Committee,
10 which Lee mentioned is chaired by Ray Hunt.
11 We met yesterday and agreed on recommendations
12 for the NPC officers, Chairs, and Members of
13 the Agenda, and Appointments Committee for the
14 Council, as well as five at-large members of
15 NPC Co-Chairs Coordinating Committee.

16 First, I'd like to comment on the
17 pending retirement of our Secretary of Energy,
18 and our Chair of NPC. I'm kind of reminded of
19 a Mexican proverb that says, "Today you're a
20 rooster, tomorrow a feather duster."

21 (Laughter.)

22 MR. PALMER: Well, I think we all

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1 would agree that there's no chance that either
2 of these two gentlemen are about to be feather
3 dusters, and so I'm looking forward to their
4 continued contributions to this industry, and
5 the things that they could do. And I would
6 like for us to give them symbol of our
7 appreciation for the work they've done.

8 (Applause.)

9 MR. PALMER: On behalf of the
10 Committee, I'm pleased to offer the following
11 nominations for individuals to serve until the
12 first meeting in 2009. As NPC Chair,
13 Claiborne Deming, NPC Vice Chair Dave
14 O'Reilly, for the Agenda Committee we
15 recommend the following members - Bob Catell,
16 Bob Fri, Ray Hunt, Dave Lesar, Andrew Liveris,
17 John Miller, Mike Morris, Jim Mulva, Rex
18 Tillerson, and Dan Yergin, and Larry Nichols
19 would serve as Chair of that Committee.

20 For the Appointment Committee, we
21 recommend the following members, George
22 Alcorn, Bob Best, Bill Fisher, Doug Forshee,

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1 Jim Hackett, John Hess, Jim Rogers, Bruce
2 Smith, Diemer True, Lou Ward, and I'll serve,
3 again, as Chair of that Committee.

4 This completes the report of the
5 Nominating Committee. On its behalf, I move
6 that the above stated be elected until the
7 next organizational meeting of the Council.

8 CHAIR RAYMOND: Thanks, Bob. I
9 assume I have a motion from him to adopt the
10 report. Do I have a second?

11 (Second.)

12 CHAIR RAYMOND: There better not
13 be anybody opposed to that. All in favor
14 please say aye.

15 (Chorus of ayes.)

16 CHAIR RAYMOND: The report is
17 adopted.

18 This completes three years as
19 Chairman for me, as Chairman of the National
20 Petroleum Council. I think historically the
21 Council has had a relatively low profile.
22 It's been significant in terms of policy

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1 issues in Washington, but the broad public
2 basically doesn't even know that the National
3 Petroleum Council existed. And I have to
4 apologize to you, the membership, for raising
5 the profile through the preparation of the
6 *Hard Truths* report.

7 Unfortunately for all of you, the
8 whole world knows you exist now. And,
9 therefore, you from time to time will be asked
10 a lot of questions that in the past you didn't
11 have to deal with. But I do believe from the
12 standpoint of the National Petroleum Council
13 it was truly a unique opportunity to deal with
14 the issues that are very fundamental to this
15 country and, frankly, to the world.

16 I don't take the notion that we
17 provided anything all that extraordinary,
18 except what I think is a total view of the
19 issues that face us. And I thank all of the
20 members of the National Petroleum Council for
21 having the faith in us to do this report, and
22 to support it financially. So from my point

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1 of view as the President of the NPC, I want to
2 thank all of you for your support. And
3 particularly I want to thank Marshall and his
4 staff, who all of you realize without them,
5 none of this would happen.

6 Lastly, I have to offer to
7 Claiborne good luck.

8 (Laughter.)

9 CHAIR RAYMOND: And hopefully some
10 progress will be made in the energy world.
11 Ladies and gentlemen, before the final items
12 on our formal agenda, let me ask if any
13 Council Member has any other matter to raise
14 at this time. Does any non-member wish to be
15 recognized?

16 Before we adjourn, we have two
17 other items that we need to deal with. First,
18 John Yates. Yes.

19 MR. YATES: To Robert Orville
20 Anderson. We have a tribute, or I do have a
21 tribute, I've known him for 65, more than 65
22 years. And as he built his company indirectly

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1 he built my company. I don't know whether I
2 can talk about Bob, but he passed away
3 December 2nd last year, and I've missed him,
4 my family has missed him. He meant so much.
5 He was one of the top oil men ever. So I have
6 a memorial.

7 The members of the National
8 Petroleum Council were deeply saddened by the
9 passing of their distinguished colleague,
10 Robert O. Anderson, December 2nd, 2007. Born
11 in 1917, he was educated at the University,
12 elementary and high school, and graduated from
13 the University of Chicago in 1939.

14 In 1941, he acquired Alco
15 Refinery, Artesia, New Mexico, and soon after
16 he established his corporate headquarters in
17 Roswell, where he kept his office and home.
18 Throughout his life, he continued to buy and
19 improve other refineries in the Southwest,
20 while wildcatting for new fields.

21 In 1957 he discovered the large
22 Empire Oblo field in New Mexico. He merged

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1 his company with Atlantic Refining Company of
2 Philadelphia. In 1965, after two additional
3 mergers, the Atlantic Richfield Company was
4 created, and Bob served that company as Chief
5 Executive for 17 years, and was Chairman for
6 21.

7 During that time, ARCO announced
8 the largest discovery ever in North America,
9 the Prudhoe Bay field on the north slope of
10 Alaska. ARCO and several other companies
11 joined to build an 800-mile Trans-Alaska pipe
12 from the Arctic Sea to the Gulf of Alaska.

13 He left ARCO in 1986, and was one
14 of the most prominent oil men in the nation's
15 history, and he owned Hondo Oil and Gas
16 Company in Roswell. He acted as Chairman or
17 the Chief Executive until he retired in 1986.
18 Wearing his trademark Stetson and his bow tie,
19 Bob was often referred to as the renaissance
20 man. For many years, he was the largest
21 individual rancher in the United States,
22 extending over a million acres. In addition,

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1 being an avid sportsman, he was an early
2 environmentalist, and he was also a
3 philanthropist, and a patron of the arts,
4 theater, music, and opera, a famous breeder of
5 cattle, and horses, and owner of "The
6 Observer", a British newspaper, and "Harper's
7 Magazine."

8 His interests were diverse. Bob
9 long sponsored the Institute of Humanistic
10 Studies. He began in 1957, and he continued
11 as the Chairman for almost 30 years. He was
12 a life trustee of both the University of
13 Chicago, and the California Institute of
14 Technology, numerous other organizations and
15 charities have enjoyed his generous support.
16 He has been honored by Native American tribes,
17 and by the governments of the United States,
18 the United Kingdom, Germany, and Sweden. He
19 holds the American Petroleum Institute gold
20 medal, the Independent Petroleum Associates
21 Chief Roughneck Award, and the Charles A.
22 Lindbergh award, medal of excellence, as well

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1 as many honorary degrees.

2 First appointed to the National
3 Petroleum Council in 1952, Bob was an active
4 member for over 50 years. During his
5 membership, Bob involved himself in the work
6 of over 20 committees, and serving as Chairman
7 of the Committee of Arctic Oil and Gas, he
8 also Chaired the Nominating Committee.

9 Therefore, with sincere admiration
10 for his achievements and contributions to the
11 industry and the Council, and with great sense
12 of loss, be it resolved on the 17th day of
13 September, 2008 that the deepest sympathies of
14 the members of the National Petroleum Council
15 be extended to his widow, Barbara, and his
16 wife of 68 years, and to his family.

17 It is further resolved that the
18 resolution be entered upon the permanent
19 record of the Council, and an appropriate copy
20 thereof be delivered to his family, as
21 remembrance of the Council's esteem and deep
22 appreciation. I made it through it.

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1 (Applause.)

2 CHAIR RAYMOND: Thank you, Bob.
3 Thank you, John. Bob Palmer will be back
4 again now to present a memorial resolution in
5 honor of Roy Huffington.

6 MR. PALMER: Roy and I were good
7 friends for something more than 40 years. We
8 shared an awful lot of interests that were
9 outside of the oil and gas business, and he
10 and I both were pretty passionate about some
11 of them. And education happened to be high on
12 the priority list, so I'm very pleased to be
13 able to be here to prepare and present this
14 resolution to the National Petroleum Council.

15 The Members of NPC were deeply
16 saddened by the death of their distinguished
17 colleague, Roy Huffington, on July 11th, 2008.
18 Roy was born in Tomball, Texas in 1917, and
19 grew up in Dallas. He received a degree in
20 geology from Southern Texas University, and
21 earned his Master's and Doctoral degrees in
22 geology from Harvard.

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1 He served the United States Navy
2 for three years on an aircraft carrier in the
3 Pacific during World War II, was awarded the
4 bronze star. In 1946, Roy joined Humble Oil
5 as a field geologist, and 12 years later he
6 founded his own oil and gas exploration
7 company, Huffco. It was headquartered in
8 Houston, and they began to discover and
9 develop fields in Texas and South Louisiana.

10 Roy believed there might be some
11 oil and gas out in Indonesia. He thought the
12 geology resembled that that he had been
13 working on in the Gulf Coast, and he began an
14 exploration program there in 1968, primarily
15 on Kalimantan, near the town of Balikpapan.
16 In a partnership with the Indonesian
17 government, his discovery in 1972, he found
18 out he had an awful lot of gas, no place to
19 sell it. He worked out a deal with Japan,
20 built a LNG plant, and started making some
21 major contributions to the Indonesian
22 government, and particularly to Roy M.

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1 Huffington.

2 Huffco grew to be a major
3 independent oil and gas company with
4 activities around the world, and Roy sold the
5 company in 1990. And if I hadn't lost my
6 place, I'd be able to tell you what happened
7 next.

8 (Laughter.)

9 MR. PALMER: Roy was appointed by
10 President Bush as United States Ambassador to
11 Austria, and he served there for three years,
12 returned to Houston, assumed his position as
13 Chief Executive Officer of a new company
14 called Roy M. Huffington, Incorporated.

15 He established the Huffington
16 Foundation, and through that he made many
17 significant contributions to Texas charities
18 and academic institutions, including his alma
19 mater, SMU and Harvard.

20 He and his wife of 58 years, the
21 late Phyllis Huffington, founded the
22 Huffington Center on Aging with Baylor College

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1 of Medicine. Roy also served seven years as
2 Chairman of the Asia Society, and more than 30
3 years he was involved with the Salzburg Global
4 Seminar, served as its Chairman, Director, and
5 a benefactor. And among his many honors, he
6 was awarded API's gold medal.

7 Roy was an active member of the
8 NPC for over 25 years. As a member, he
9 involved himself in numerous studies, and on
10 committee work. And most recently was a
11 member of the NPC Committee on Global Oil and
12 Gas.

13 Therefore, it's with sincere
14 appreciation for his achievements and
15 contribution to the nation, to industry, and
16 the Council, and a great sense of loss, be it
17 resolved on the 17th day of September, 2008,
18 the deepest sympathy of the Members of the NPC
19 be extended to his family.

20 It is further resolved that this
21 resolution be entered into the permanent
22 records of the Council, and an appropriate

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1 copy be delivered to his family in remembrance
2 of the Council's esteem and deep appreciation.
3 And I so move.

4 CHAIR RAYMOND: Thanks, Bob.

5 Ladies and gentlemen, both of
6 these members of the National Petroleum
7 Council were good and long friends of mine,
8 and I have to tell you, that for years I
9 interfaced with Roy Huffington because he
10 still continued to get \$38 a year from the
11 ExxonMobil Corporation, and he said that was
12 the most important \$38 he received every year.

13 I propose we signify our adoption
14 of these resolutions in memory of Bob Anderson
15 and Roy Huffington by rising for a moment of
16 silent reflection and prayer. Thank you.

17 Before we adjourn, Claiborne,
18 would you like to make a few comments?

19 MR. DEMING: Thanks, Lee. I'd
20 like to close by saying first we owe a real
21 debt of gratitude to Lee Raymond for
22 overseeing the study, probably is considered

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1 the most important study that the Council has
2 done. And Lee is uniquely qualified to
3 oversee it. Secondly, what's next?

4 As we prepare for a new
5 administration, the Council will be quite
6 busy. The Secretary has made some suggestions
7 for future studies. These will be reviewed.
8 We also will look at perhaps some specific
9 proposals to implement some of the
10 recommendations from the *Hard Truths* study.
11 And all of these will be scoped so that when
12 the new administration comes in, the new
13 Secretary of Energy is in place, the Council
14 be ready to make some recommendations.

15 So, in summary, Mr. Secretary, the
16 Council accepts the challenge, and will be
17 ready to serve the government, and provide the
18 role that the NPC has so ably done since 1946.

19 CHAIR RAYMOND: Do I have a motion
20 for adjournment?

21 (So moved.)

22 CHAIR RAYMOND: Second.

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(Second.)

CHAIR RAYMOND: The 118th meeting
of the National Petroleum Council is hereby
adjourned.

(Whereupon, the proceedings went
off the record at 10:48 a.m.)

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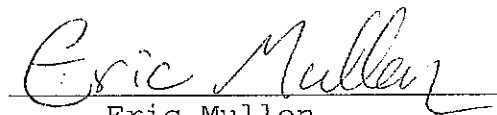
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Before: Lee Raymond

Date: September 17, 2008

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Eric Mullen