

DEPARTMENT OF ENERGY
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NATIONAL COAL COUNCIL

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2013 FALL FULL COUNCIL MEETING

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FRIDAY
NOVEMBER 1, 2013

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The Council met in The Washington Court Hotel, Grand Ballroom, 525 New Jersey Avenue, N.W., Washington, D.C., at 9:00 a.m., John W. Eaves, Chair, presiding.

PRESENT

JOHN W. EAVES, Chair, National Coal Council
JEFFREY L. WALLACE, Vice Chair, National Coal Council

JANET GELLICI, Executive Vice President and Chief Operating Officer, National Coal Council

FREDERICK D. PALMER, Coal Policy Committee

Chair, National Coal Council

GREGORY A. WORKMAN, Finance Committee Chair, National Coal Council

DAVID F. SURBER, Communications Committee Chair, National Coal Council

HOWARD K. GRUENSPECHT, Deputy Administrator, U.S. Energy Information Administration

ROBERT BRYCE, Senior Fellow, Manhattan Institute

C. THOMAS ALLEY, JR., Vice President,
Generation, Electric Power Research
Institute

DIVYA REDDY, Analyst, Global Energy &
Natural Resources, Eurasia Group

PETER W. DAVIDSON, Executive Director, Loan
Programs Office, Department of Energy

LARRY GRIMES, Legal Counsel, National Coal
Council

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

2 9:01 a.m.

3 CHAIR EAVES: Good morning, ladies
4 and gentlemen. My name is John Eaves and I am
5 chairman of the National Coal Council. The
6 Fall 2013 Meeting of the National Coal Council
7 is hereby called to order.

8 This morning we're very fortunate
9 to have a number of very special guests.
10 We're pleased to welcome this morning Deputy
11 Administrator of the Energy Information
12 Administration, Howard Gruenspecht. EIA
13 provides valuable services to the energy
14 industry and we look forward to hearing
15 Howard's remarks this morning related to the
16 coal industry. Thanks for being here, Howard.

17 I would also like to acknowledge
18 the agenda participation of Peter Davidson,
19 Executive Director of DOE's Loan Program
20 Office. We're eager to hear about the update
21 from Peter on the Advanced Fossil Energy
22 Project Solicitation. Thanks for your

1 attendance, Peter.

2 I'm also pleased to recognize
3 Robert Wright, a Senior Advisor in the
4 Department of Energy's Office of Fossil
5 Energy, as the Federal Designated Officer.
6 Welcome, Bob. Good to see you again.

7 We have other exceptional speakers
8 on today's agenda as well. They are Robert
9 Bryce, a Senior Fellow with The Manhattan
10 Institute, who will provide an interesting
11 perspective on global energy trends and how
12 electric demand is driving coal demand;

13 Tom Alley, who is Vice President
14 of Generation with EPRI, who will share with
15 us EPRI's perspective on flexible supply
16 generation; and finally, Divya Reddy, a Global
17 Energy and Natural Resource Analyst with
18 Eurasia. The group will share the lessons
19 learned from Europe's experience in
20 implementing CO2 emissions mandate.

21 We also have some Council business
22 to attend to today, so we can see we've got a

1 full agenda this morning.

2 However, before proceeding any
3 further, I'd like to acknowledge one of our
4 members who recently was acknowledged for his
5 life-long accomplishments. Last week, the
6 Washington Coal Club presented their Lifetime
7 Achievement Award to Dick Bajura, Director of
8 National Research for Coal and Energy at WVU.

9 Dick, if you're here, would you
10 please stand?

11 (Applause.)

12 Great job, Dick.

13 Okay, so now down to business.

14 This meeting is being held in accordance with
15 the Federal Advisory Committee Act and the
16 regulations that govern that Act. Our meeting
17 is open to the public and I'd like to welcome
18 guests from the public who have joined us
19 today. An opportunity will be provided to the
20 guests to make comments at the end of the
21 meeting.

22 Full and complete minutes of this

1 meeting are being made, as well as a verbatim
2 transcript. Therefore, it's important that
3 you use the microphone when you wish to speak
4 and you begin by stating your name and your
5 affiliation.

6 Council members have been provided
7 a copy of the agenda for today's meeting. I
8 appreciate having a motion for the adoption of
9 the agenda.

10 (Moved.)

11 Can I have a second?

12 (Second.)

13 All in favor?

14 (Chorus of ayes.)

15 Thank you.

16 Our first speaker this morning is
17 Deputy Administrator of the U.S. Information
18 Administration. Over the past 35 years, he
19 has worked on energy-related environmental
20 issues. He's also served as Senior Staff
21 Economist at the White House Council of
22 Economic Advisors. He's also served as

1 faculty member of the Tepper School of
2 Business, an Economic Advisor to the Chairman
3 of the U.S. International Trade Commission.
4 He has a Ph.D. in Economics from Yale and a
5 B.A. from McGill University.

6 Please welcome Dr. Howard
7 Gruenspecht.

8 (Applause.)

9 DR. GRUENSPECHT: The most
10 important words John said were "verbatim
11 transcript." To me, that translates as to be
12 careful.

13 (Laughter.)

14 Thank you, John, for the kind
15 introduction and good morning to everybody
16 here. For those of you who don't know already
17 know us, the U.S. Energy Information
18 Administration is a statistical and analytical
19 agency within the Department of Energy that
20 collects, analyzes, and disseminates
21 independent and impartial energy information.
22 That information encompasses both data and

1 also as part of our mission we provide
2 forward-looking forecasts and projections
3 which is unusual for a federal statistical
4 agency but it is part of our mission.

5 Because EIA does not take
6 positions on policy issues and has
7 independence with respect to the information
8 it provides, my view should not be construed
9 as representing those of the Department or
10 other federal agencies. So with that a
11 disclaimer, like I'm sure you guys have this
12 page of disclaimers in like tiny print, you
13 know. That's enough for me.

14 Let's roll forward. Next slide or
15 maybe I can do that myself, if I was smart
16 enough to -- there you go. Passed the first
17 test.

18 So what this is about is just
19 putting coal into the larger context of U.S.
20 energy. Primary energy is shown on the left
21 hand side with quantities shown on quadrillion
22 BTU. EIA, I guess, we should have pounds and

1 shillings as well, whistle back in the old
2 measures, but in rough terms one quad is 172
3 million barrels of oil, 50 million tons of
4 coal or a trillion cubic feet of natural gas.
5 The sectors that use primary energy are
6 represented on the right hand side, again,
7 with the quantities of primary energy used and
8 the spaghetti, it's probably impossible to
9 read this thing from a distance, are the
10 source-sector links.

11 So the idea if you go down to
12 nuclear, 100 percent of the nuclear energy is
13 used in the electric power sector, so that's
14 why there's 100 on that little line collecting
15 nuclear energy in the electric power sector,
16 and 21 percent of the primary energy that goes
17 into the electric power sector comes from
18 nuclear.

19 So one thing that you can see is
20 that many energy sources, not most, are tied
21 particularly to one demand sector. So I mean
22 coal is of the most interest to you and so

1 looking at the coal box, the 19.7 quads or 20
2 percent of U.S. energy, if you look at the
3 three lines running out of it, 92 percent of
4 the coal is used in the electric power sector.
5 And on the uses side of the slide, so tracing
6 that link to the electric power sector, 46
7 percent of the primary energy used in electric
8 power comes from coal. So many different
9 fuels are used to provide energy to generate
10 electric power, but coal is the largest source
11 of energy for power generation by a
12 significant margin in 2011. This happens to
13 be 2011 and it's still obviously true today.

14 So the future of domestic coal use
15 is inextricably linked to its use for electric
16 power generation which led me to focus on the
17 outlook for electric power and coal in this
18 presentation.

19 It is interesting though how many
20 of the fuels -- so coal, nuclear, and
21 petroleum are really, it's like one dominant
22 source sector link. And renewables and

1 natural gas, you have really more variety.
2 Natural gas is used almost 30-30-30, if you
3 will, in buildings and electric power and
4 industrial. But coal is like many of the
5 others in having a dominant use.

6 So here's a snapshot of the 2012
7 generation mix. Coal-fired plants are the
8 leading provider of electricity despite the
9 decline in share of generation provided by
10 coal between 2007 and 2012. I mean it was up
11 over 50 percent in 2007. It has come back a
12 little bit in 2013. We can talk a little bit
13 about that later. But coal is very important
14 to electric power, despite what's going on.

15 The issues surrounding coal like
16 in issues surrounding energy, in general, are
17 often discussed at the national level
18 everything I've done so far. But it's
19 important to recognize that there are very
20 significant differences in the generation mix
21 across regions. For example, oh, this one is
22 not. This is prices across regions. That's

1 the other way around. So let me go to --
2 here's the fuel mix for generation across
3 regions. So this map kind of shows, I'll pick
4 something else. I'll pick the Northwest power
5 pool in the upper left hand corner and they've
6 got a lot of hydro, that yellow piece is more
7 than half of their stuff.

8 So if you look at coal, the top
9 line, the blue line, and the blue in all these
10 pies, the national average is I guess -- was
11 42 percent in 2011, but going by region, you
12 know, the minimum was zero. That's pretty
13 low. And the maximum was 80. That's pretty
14 high. So sometimes we like talk about these
15 things at the national level, but it's not
16 really like where they are. You almost have
17 to look at it a little more diverse.

18 Let me go back now. One of the
19 things that drives some of these differences
20 across regions have to do with prices and
21 prices of coal, while natural gas prices --
22 natural gas prices within the United States

1 are fairly well converged. I mean cold snaps
2 where transmission capacity gets stretched and
3 you get big basis differential across
4 locations, but other than that, which is sort
5 of a short, shorter term kind of phenomenon,
6 you really do find natural gas prices
7 specifically delivered to electric power
8 customers not that different across regions of
9 the country. But coal prices delivered to
10 electric generators are really different
11 across regions within the United States. And
12 clearly what matters to the competitiveness of
13 coal is the economic situation and price is
14 one part of that economic situation in the
15 area where a particular plant operates.

16 And differences in the average
17 delivered price of coal across regions often
18 reflect the role of transportation costs. You
19 all know this, that can account for two-thirds
20 or more of the delivered price of western coal
21 to generators in the East.

22 Of course, the actual economic

1 situation is even more complex because besides
2 these huge regional differences, you also have
3 differences across individual plants within
4 the regions depending on exactly how they're
5 situated and what contracts they have. And
6 you even have within an individual plant maybe
7 some mixture of spot coal and contract coal
8 and those might have very different costs. So
9 you might have a take or pay situation for
10 some volume which essentially makes it very
11 attractive to take that volume. You may be
12 paying a lot for your marginal supply if your
13 contracted amounts don't -- so it's just a
14 very -- the problem with doing anything with
15 energy is it always down, the devil is always
16 in the details and there are a lot of details.
17 So just encourage, and I'm sure you do this
18 every day in your business, but somehow in the
19 national discussion, we have to think more
20 about the details because the details matter.
21 And the average necessarily doesn't mean that
22 much.

1 So let's see where we are now.

2 This is fuel mix. We did that.

3 So let me turn a little bit, you

4 know, obviously the future is yet to be

5 written. I sound like Lawrence of Arabia.

6 For some men, nothing is written. But I think

7 it's useful to consider the outlook for coal-

8 fired generation in the United States and some

9 of the key uncertainties that surround it.

10 The physicist, Niels Bohr, sounding like Yogi

11 Berra, you know, observed that prediction is

12 very hard, especially if it's about the

13 future. So what I presented so far is kind of

14 data and we can argue about it if we like, but

15 it is what it is.

16 But in the future, you know, it

17 isn't written and prediction is very hard.

18 EIA approaches that by including

19 many alternative cases in its outlook in

20 recognition of the uncertainties inherent in

21 making predictions about energy markets in

22 general and coal's future in particular. And

1 many of the alternative cases that we look at
2 have important implications to the projected
3 role of coal in future electricity generation.

4 I kind of want to spend the rest
5 of the time and it's not all the time because
6 I'm hoping that you folks will want to engage
7 a little bit, but talking about some of those
8 issues looking forward.

9 This is one last -- now that I
10 said that, I want to look back one last time.
11 So one critical market factor affecting the
12 outlook of coal generation is clearly the
13 price of natural gas. Unlike the oil market,
14 the current market for natural gas is not very
15 globally integrated and the way I'm trying to
16 illustrate that is to show that since about
17 2008, you've really had a break, if you will
18 in gas prices. Henry Hub in Canada, the two
19 blue lines at the bottom and then you have
20 your kind of Europe -- these are some of the
21 European spot prices, actual prices in Europe
22 are sort of a mix between spot prices and some

1 oil index prices. It's sort of moving more
2 towards spot prices. It's clearly higher by
3 a significant amount than the U.S. prices.
4 Japan gets all its natural gas in the form of
5 liquified natural gas. And that red line is
6 their prices, what they've been paying. And
7 you can see that that's a whole lot different
8 than the U.S. and Canada.

9 And the top, I just put oil, Brent
10 oil in BTU terms just as a comparator. So
11 Japan, natural gas delivered costs about as
12 much as oil on an energy content basis. In
13 Europe, it's significantly less. And in the
14 U.S., it's a lot less.

15 You know, I'm not sure what to say
16 about this. Each \$1 per million BTU
17 difference in the price of natural gas
18 translates into a \$7 per megawatt hour
19 difference in the cost of generating
20 electricity from an efficient combined cycle
21 plant. So like a \$12 or let's say there's a
22 \$12 spread between blue lines and Japan's

1 line, that translates into a more than \$70 per
2 megawatt hour spread in the variable cost of
3 operating a combined-cycle unit.

4 So the future development of
5 natural gas markets and there are really two
6 questions, one, the twin questions of the
7 degree of future global convergence in natural
8 gas prices, you know, and the strength of the
9 linkages between natural gas prices and the
10 prices of other fossil fuels.

11 I mean -- economists, that's what
12 I am -- tend to think that markets work and
13 there will be some kind of economic
14 convergence. I think the convergence is not
15 going to be like the oil market because of
16 transport costs of natural gas across
17 continents are very high because of
18 liquefaction costs and LNG tankers are not
19 cheap stuff. But there's some notion of an
20 economic convergence. But there really is an
21 open question of if there is an economic
22 convergence what will the convergence be?

1 What will natural gas converge toward? Will
2 it converge -- I mean I know the natural gas
3 people would like it to converge more toward
4 oil, higher natural gas prices which you might
5 like also, but I think that many of the
6 customers would like sort of a more gas on gas
7 competition where natural gas prices broke
8 away from oil prices. You may not have a vote
9 in this, but you have an interest in it. And
10 it's really hard to know what the timing and
11 the nature will be. But this is just
12 something to keep in the back of your head.

13 So this one like some others I'll
14 use today sort of combine EIA's data side and
15 its projection side so there's like a very
16 faint vertical bar that says 2011 which you
17 can't even see and everything to the left of
18 that is data. And then you have the stuff
19 beyond 2011 which is -- that looks like our
20 reference case forecast.

21 So there's a dividing line between
22 fact and projection. You can see that our

1 projection, certainly, we expect electricity
2 use to grow only slowly over the next 30
3 years. The slowdown in electricity growth is
4 really a long-standing trend. This is U.S.
5 only. I know that my colleague will say more
6 about the world and maybe the world today is
7 a lot where the U.S. was when I was a child in
8 the 1950s. It's kind of scary, I think, that
9 I'm that old. But you know, our electricity
10 growth was eight, nine, ten percent when I was
11 a kid, a year. It slows down, it slowed down
12 to two to three percent in the '80s and '90s
13 and over the last decade it's been less than
14 one percent growth per year.

15 The factors driving those trends
16 includes slowing population growth, near
17 market saturation and key electricity using
18 appliances, improving technology of nearly all
19 equipment and appliances in response to both
20 market, technology opportunities, but also
21 standards. And a shift in the economy toward
22 less energy-intensive industry, efficiency

1 standards for lighting and other appliances
2 put in place over the last few years like the
3 light bulb thing being phased in right now
4 will continue to put downward pressure on
5 electricity demand growth as new equipment is
6 added and existing stock is replaced.

7 Absent a very rapid introduction
8 of some new electricity-using devices, a sharp
9 rebound in electricity demand growth, I mean,
10 we don't expect it. It doesn't mean it can't
11 happen because it's the future. But I would
12 actually argue that this might be -- there's
13 as much downside risk, frankly, to our
14 forward-looking view as there is upside risk.

15 Someone says well, what about
16 electric cars? What about -- like, well,
17 yeah. If you have one million electric cars
18 like a Chevy Volt and you charge them every
19 day, that would add five terawatt-hours a year
20 to demand, one tenth of one percent roughly is
21 what we project for demand. If we had ten
22 million, it would maybe a percent. If you

1 have 100 million, it would be 10 percent. But
2 I mean you've got to quantify these things.
3 People say well, what about electric cars,
4 that will make it go like it was in the '80s
5 or 1950. And that's just not -- if you add it
6 up, it's just not true.

7 So one very important factor
8 affecting the competitiveness of different
9 fuels is whether we're in what I call a new
10 versus new setting that occurs when new
11 generation capacity of some kind must be built
12 to serve growing load like when I was growing
13 up in New York City, uptown. We always had
14 these Con Ed, I remember the little things
15 that used to block the holes in the street.
16 Dig We Must. Kind of sounds like Yoda, you
17 know? That was good -- was it George Lucas
18 who did those movies? He must have got it
19 from Con Ed, you know?

20 (Laughter.)

21 Dig We Must. But I remember we
22 were playing stickball and stuff, you know,

1 Dig We Must. You've got to think of that when
2 your load is doubling every eight or nine
3 years.

4 So in a new versus new setting,
5 you've got to build something new to serve
6 load and new technologies really are competing
7 against each other. Actually, coal has a much
8 stronger position in a new versus old setting
9 which is kind of where we are in the United
10 States today because load is growing so slowly
11 the need to build new stuff isn't to serve
12 growing load. It isn't like I have to serve
13 growing load. I have to build something new
14 and I have to choose which new thing to build.

15 Economically, we're much more in a
16 new versus old setting where it may make sense
17 to build something new, but economically to
18 build that new thing, it has to be able to
19 compete effectively stuff you've already got.
20 The old stuff, it's capital costs which are
21 often considerable are in the rear view mirror
22 and really don't matter to the economics where

1 in a new versus new competition both capital
2 and operating costs of all competing
3 technologies are in play. So in a new versus
4 old setting, you've got your coal plants or
5 your nuclear plants or whatever it is, what
6 you really care about are only the going-
7 forward costs.

8 And on a typically delivered coal
9 price of still \$2.40 per million BTU in the
10 United States, the average U.S. coal plant has
11 a fuel cost of under \$30 per megawatt hour in
12 the current, and I underline the word current
13 domestic policy environment. And it's kind of
14 hard, you know, even if you're very optimistic
15 about some of the new energy technologies.
16 Beating capital and operating costs is
17 something new, competing with \$30 megawatt
18 hour. That's pretty tough.

19 Now keep in mind, we just spent
20 some time earlier talking about all the
21 regional differences and I feel clearly we
22 couldn't get into that or spend too much time

1 talking. So unless new technologies are cheap
2 enough for their combined operating and
3 capital costs to fall below the operating
4 costs of existing plants which is a very tough
5 condition to meet. Slow electricity demand
6 growth does limit the market for new
7 generation technologies. But there are two
8 things that could change that and I think
9 maybe some people outside this room are hoping
10 for them and people maybe inside this room are
11 hoping not for them.

12 One is that some of the new
13 technology purveyors may hope for new
14 regulatory programs that raise the cost of
15 keeping existing generators running.
16 Specifically, it makes existing generators
17 face a new capital cost so there has to be a
18 new decision as to whether I should invest
19 that capital cost. And the other alternative
20 is subsidies and/or incentives for new
21 generation to force new generation into the
22 mix.

1 So here's a little picture.
2 Typical combined-cycle gas plants require
3 about two-thirds of the BTU input per megawatt
4 hour than a typical coal-fired steam plant.
5 So competitive price parity roughly speaking
6 and this is all rough stuff between natural
7 gas and coal for dispatch purposes is defined
8 by a ratio of about 1.5 to 1 in areas where
9 the two plant types compete to serve load.

10 In other words, you can afford to
11 buy -- if you're running a combined-cycle
12 plant, you may be paying \$3 a million BTU for
13 gas is competitive. In some sense, we're
14 paying \$2 a million BTU for coal. So all this
15 does in the big graph is put the ratio of the
16 natural gas price with the steam coal price
17 and you can see that in the -- let's say from
18 2000 to 2007 and the ratio was much above 1.5,
19 got up as high as 5 in the middle of that
20 2005, 2006, 2007. But we all know what's
21 happened in the natural gas industry.

22 We know that natural gas prices

1 have come down a lot. Coal prices have
2 actually risen somewhat and as a result, this
3 is 2012, you can see that on a national
4 average basis, again that green line dipped
5 below that 1.5. We all know what happened and
6 you all know what happened, so I don't have to
7 repeat it here.

8 Again, we have the facts on the
9 lefthand side and then the projection on the
10 righthand side. We, in our baseline
11 projection, we do have natural gas prices
12 rising faster than coal prices, going out into
13 the future, again, national average. So over
14 time we see coal at least in the dispatch
15 level regaining some competitiveness vis-a-vis
16 natural gas in terms of running an existing
17 coal plant or an existing natural gas plant.

18 So that kind of -- drives us to
19 our sort of view of electricity, where
20 generation will come from. So generation does
21 grow, but it's only about one percent a year
22 in this projection. And natural gas and

1 renewables they gain market share. So in the
2 middle there on that 2011 line I sort of show
3 the market shares, 25 for natural gas, 13 for
4 renewables and that includes hydro obviously,
5 19 for nuclear, and 42 for coal. That's down
6 a lot from 1990 when coal was 53 and we have
7 coal headed down to sort of in this baseline
8 case 35 percent of generation.

9 Coal's generation share does
10 remain significant. We don't see a lot of new
11 coal plant builds. We don't see really any
12 new coal plant builds beyond what's being
13 built now. All of what is shown here reflects
14 the utilization of current and imminent sort
15 of plants, things that are under construction.
16 I know some people are sitting in this meeting
17 have plants under construction.

18 You know, we have coal generation
19 falling in absolute terms through the middle
20 of this decade if the max requirements result
21 in the shutdown of coal capacity that can't
22 economically justify investments in equipment

1 needed for compliance, but it rises thereafter
2 as the utilization of the fleet that's left.
3 We think because of the thing I showed you
4 last time with relative price of coal and
5 natural gas, we think running those plants
6 would be pretty attractive if they're there.

7 But that's only one view of the
8 world and the projected U.S. generation mix is
9 very sensitive to natural gas prices. So we
10 also in our outlook, we have what we call a
11 high oil and gas natural resource case where
12 natural gas prices are lower than in the
13 reference case and in that world so our
14 reference case, sort of generation of coal and
15 gas, the coal is the black line, the solid
16 line, and the natural gas is the red line.
17 But if you go to the high oil and natural gas
18 resource case, you see a very different
19 picture where the gas and coal actually cross
20 over, the dashed lines.

21 So at lower natural gas prices,
22 that's a market thing. That has nothing to do

1 with the policy or whatever. It's just a
2 question of how the technology and the gas
3 resource develops and what the resource
4 picture looks like. But coal is going to be
5 very sensitive to that. That's one that is
6 more policy oriented and that is the reference
7 case projection is based on current laws and
8 policies, but potential policy developments
9 matter a great deal to future role of coal-
10 fired electricity generation. So policy
11 toward greenhouse gas emissions is
12 particularly important.

13 So here what we had and again this
14 was all in our outlook, a set of carbon fee
15 cases that are used to represent different
16 initial settings and ramp rates for policies
17 that would put either an explicit or an
18 implicit price on carbon dioxide emissions
19 from fossil fuel generation. And again, it's
20 not because we, EIA doesn't advocate any
21 policies and I very much doubt that if there
22 were a policy related to greenhouse gases, it

1 wouldn't actually be a carbon fee, but this is
2 just a way of representing sort of generically
3 different stringencies of policies.

4 And you can see that in all these
5 cases, projected coal-fired generation is
6 particularly, significantly below the
7 reference case which is the black line and
8 with the assumed granting of policies because
9 these are all like a fee that starts at \$10
10 and increases 5 percent a year or a fee that
11 starts at \$10 and increases 7.5 percent a
12 year, a \$20 fee and a \$30 fee. Those are both
13 I think 5 percent a year also, although the
14 slide doesn't say that which it should. So
15 I'll go back and talk to my people. But it
16 really has a big impact of coal-fired
17 generation.

18 So in addition to greenhouse gas
19 mitigation policies, other fuel-specific
20 regulations and some of these affecting coal,
21 nuclear power and renewable technologies can
22 have a profound effect on the future mix of

1 fuels used for generation and this illustrates
2 and so can the rate of economic growth because
3 that will influence the rate of electricity
4 demand growth and higher and lower coal
5 prices, higher and lower natural gas price we
6 already discussed and the greenhouse gas
7 cases, I think this is sort of a
8 representative set of them. So this is kind
9 of looking at how the mix of -- the level of
10 generation is changing across these cases as
11 well, but this is how the shares of
12 generation, again, in several of our different
13 cases change to 2040. And I think the results
14 are really fairly intuitive.

15 And then sort of bringing it back
16 to coal itself, how do these cases then move
17 directly to coal consumption and the green bar
18 on the left hand side, that's just historical,
19 what we did in 2011 and -- that was
20 production, not consumption. This is
21 production data for 2011. And then the issue
22 is what does it look like in the future. And

1 our reference case is somewhere buried in
2 there. It's that brown one in the middle.
3 And you know, we have coal production kind of
4 not relative to the 2011 level. Certainly it
5 doesn't get back to the 2007 level, the heyday
6 kind of level, but it's modestly up in 2020
7 and 2040 relative to 2011 in our reference
8 case. But you can see that coal costs whether
9 they're in this high, oil and gas resource
10 case which again tends to lead to a lot less
11 coal consumption in the power sector; high
12 coal cost, low coal -- your own costs matter
13 a lot. Whether you have some of these
14 greenhouse gas policies is illustrated in one
15 here. Has a big impacted on projected coal
16 production.

17 So I don't want to sort of steal,
18 he's a much more entertaining speaker than I
19 would ever be anyway, Robert Price's thunder,
20 but I'd like to turn briefly to the global
21 market context. And again, under our current
22 laws and policies assumption, global coal

1 demand is expected to grow robustly over the
2 next several decades. This is what's
3 happening to all the energy sources in the
4 world. This is world, this is not U.S.

5 And coal is -- it kind of tapers
6 off a little bit toward the end, but you know,
7 obviously, historically, if you look from 2000
8 to 2010, coal has been gangbusters. It's
9 really been the big story in global energy.

10 The driver is growing demand for
11 electricity in the developing world where you
12 have rising per capita income in developing
13 Asia. Then you have in other parts of the --
14 some other parts of the world don't grow as
15 fast in terms of per capita income, but they
16 have very high population growth like the
17 Middle East and Africa and population growth
18 matters, too. And so there's globally the
19 outlook for coal is that front part of that
20 projection is pretty --still pretty strongly
21 upward sloping. And then this is again the
22 U.S. part of it. The U.S. has been a net

1 exporter. We expect it to be a net exporter
2 throughout the period, but we don't see the
3 U.S. becoming a very large net exporter. And
4 that could change.

5 Obviously, U.S. coal could maybe
6 supply more of that growing demand for coal,
7 but some of the cost issues and we do think
8 that some of the other maybe suppliers can
9 maybe -- including domestic supply in some
10 places that has had some problems, some of the
11 places where demand is growing rapidly we
12 think can be served from the domestic
13 resources.

14 So with that, I think I'm done and
15 I guess I could end with a brief story unless
16 you guys want to talk a lot in which case I'll
17 skip the brief story, but first the EIA
18 administrator was a guy by the name of Lincoln
19 Moses. And there's no mention of God or
20 something, but he was giving testimony at a
21 Senate hearing where one of the Senators
22 became very frustrated with all the caveats

1 and I talked about caveats and people talked
2 about the future. And so the Senator demanded
3 that Administrator Moses just skip the
4 hypotheticals and give him just the facts.
5 And Moses replied, "Sir, there are no facts
6 about the future." And it's sort of important
7 to keep that excellent point in mind as we
8 contemplate our energy future and coal's
9 future. Other than that, just look forward to
10
11 -- hopefully I have left enough time for
12 dialogue. That was my intention. I look
13 forward to it. So thank you very much.

14 (Applause.)

15 It's better if you don't hear it.

16 It works for my verbatim transcript. Yes.

17 MR. NEWELL: Good morning. Don
18 Newell with the Kentucky Energy Cabinet.
19 Could you go back to Slide 10, please?

20 What I'm seeing here is that
21 you're saying that electricity net generation
22 billing kilowatt hours in 2040 projected with

1 no facts in the future. I understand that
2 caveat. I use it with my wife all the time.

3 DR. GRUENSPECHT: I'm not going
4 there.

5 MR. NEWELL: You say that total
6 generation is going to increase slightly from
7 today. You also stated that you don't see
8 much, if any, new coal-fired generation.

9 DR. GRUENSPECHT: New plants.

10 MR. NEWELL: New plants, correct.

11 DR. GRUENSPECHT: Beyond what's
12 already there.

13 MR. NEWELL: Beyond what's already
14 there.

15 DR. GRUENSPECHT: And what's being
16 built.

17 MR. NEWELL: Okay, so --

18 DR. GRUENSPECHT: I assume these
19 guys are going to finish their opus.

20 MR. NEWELL: The only way that you
21 get an increase in net generation then is
22 through increased utilization of existing

1 plants.

2 DR. GRUENSPECHT: Right.

3 MR. NEWELL: In order to have that
4 kind of capacity available, what assumptions
5 did you make on retirements?

6 DR. GRUENSPECHT: I didn't make
7 assumptions. That's a strong word. But we do
8 collect data from utilities on their official
9 plans for retirements. But I think it's fair
10 to say it will vary across our different
11 cases. That's one thing. So you're retiring
12 more capacity in this dashed line case than
13 you are because if people really think that
14 gas prices are going to stay real low, they
15 are less inclined to make those capital
16 investments. But we're retiring about -- I
17 don't know, I think in our reference case, we
18 retire about 50 gigawatts, about a sixth of
19 current capacity and I think in some of the
20 other cases maybe is like 80, high 70s.

21 But one thing to keep in mind is
22 that what's being retired, retiring a sixth,

1 16 percent of the capacity say does not mean
2 that you would expect generation to drop 16
3 percent from coal-fired plants, because one of
4 the things, which plants you choose to shut
5 down are relatively speaking the dogs. I mean
6 there are some of these plants that frankly
7 are open that are not generating much.
8 They're in regions of the country where load
9 has fallen off the table. So retiring those,
10 the notion of translating the capacity retired
11 to the generation is, I think, you know, not
12 the right metric.

13 I think you can keep generation --
14 again, we have coal generation, we have going
15 from like -- I guess this thing starts in
16 2005, so the black line, you're going up about
17 2,000 billion kilowatt hours and we have it
18 dropping down to 1,500 so that's like a
19 serious drop. And then we have it going back
20 up, again, the black solid line I guess what
21 looks like 1,800 billion kilowatt hours and we
22 think you can do that, you know, with the

1 plants that remain after you retire the let's
2 say what I think is about 50 gigs in the
3 reference case because those plants were not
4 your heavy hitters or your high runners before
5 they were retired. But hopefully that's
6 responsive? I'm not trying to dodge this one.
7 I think this one I can afford to answer.

8 MR. NEWELL: It's responsive, but
9 again, if you're retiring the dogs, as you put
10 it, the ones that are under utilized, they
11 have the most additional utilization
12 available, you're saving your most dispatched,
13 your highest utilized plants and I just don't
14 see you having the capacity factor --

15 DR. GRUENSPECHT: I don't have it
16 in my head because I'm not that -- I don't
17 have that good a memory. But you know, you
18 will see in our projection what the capacity
19 factor is. And it's not that -- it's -- our
20 view is that these plants -- I mean they're
21 not nuclear plants. We don't think they're
22 going to be running at 90 percent or

1 something, but we probably let a lot of our
2 coal -- in theory, our coal plants can run at
3 80 percent. And if you look at what's left
4 and it's not -- in aggregate, it's not running
5 at 80 percent at the end.

6 I mean the utilization rates have
7 come down across the fleet because there
8 hasn't been that much retirements and you've
9 gone from 2000 down to 1500. I mean the
10 capacity factors are in this. They're not on
11 this chart, but they're there. They're
12 public. You can read them. You can agree
13 with them. You can disagree with them, but
14 they're not like 105 percent. I mean -- and
15 they're not 95 percent either. They're in the
16 70 to 80 range.

17 MR. BAJURA: Thank you for your
18 presentation. I think it's the next slide
19 that my question refers to in the scenarios
20 about prices on carbon. Have you considered
21 in your projections, if we were to ask for
22 carbon capture in natural gas plants, and what

1 that would do to the projections?

2 DR. GRUENSPECHT: This is just the
3 price on carbon across the -- again, we are
4 not in the business of designing policies for
5 the administration or anyone else. So all we
6 wanted to do was have something that showed
7 some kind of generic policy. This applies to
8 everything. So this is not just to coal
9 emissions. This is applied to natural gas
10 emissions. And we do have, in fact, in our
11 framework, we allow certainly one of the
12 responses people can do is put CCS on either
13 a coal plant or a gas plant. As it turns out,
14 you don't get a lot of that. You get the few
15 that are being built. You get maybe another
16 one that's being built with some strong
17 federal support. But economically, to us at
18 least with the way we're carrying the costs of
19 CCS, it doesn't seem to work economically for
20 us. So there's not a mandate to do anything.

21 There's not a mandate to either do
22 it or not do it. It's a possibility to do it.

1 It's available as a choice, but the choice
2 doesn't get made. One of the issues is and we
3 were actually talking about that this morning
4 in the hallway, like I mean there's a value of
5 sequestered CO2 in terms of enhanced oil
6 recovery which is real. You know that.
7 You're in the industry. You've got people
8 building pipelines to move this. For a long
9 time we were basically mining CO2 and natural
10 CO2 and now we have people moving CO2 from --
11 not mostly from the power industry, more from
12 chemical plants, hydrogen separation plants.
13 We get a more concentrated stream. But very
14 quickly, if you start applying CO2 on a large
15 scale in the power center which is like a huge
16 -- I mean, orders of magnitude, the market
17 value of the CO2 goes to zero because you've
18 just swamped the demand. So in the long run
19 that doesn't help you with the economics on a
20 large scale deployment, although some of the
21 first movers may get some economic value out
22 of that.

1 MS. GELLICI: The last question
2 for the record was from Dick Bajura with West
3 Virginia University.

4 MR. PALMER: Fred Palmer, Peabody
5 Energy and thank you for your presentation.
6 In the context of your future demand scenario
7 for the United States, in terms of the 28
8 percent growth in electricity demand, my
9 question is two part. Number one, what is the
10 assumed population increase between now and
11 2040 implicit in that? And number two, have
12 you done any thinking with respect to a
13 potential industrial resurgence, particularly
14 in the Gulf States because of oil and natural
15 gas prices, chemicals, expanded refining
16 activity, etcetera in your future growth
17 scenario?

18 DR. GRUENSPECHT: Thank you. I
19 think those are good questions. I'm trying to
20 remember what the population growth is. I
21 think the U.S. is something like -- again, we
22 don't grow our own on this. We do get it from

1 Census. Mostly, they don't do forward-looking
2 stuff. On population, they do. And we use
3 theirs. I think it's on the order of .9
4 percent a year growth which is -- I think that
5 was in the -- actually, it's going to be lower
6 in the next projection because they've come
7 down. I think we'll probably carry something
8 like .7 which has implications, but they were
9 not in the direction that I think you were
10 leaning. Yes, it's very different.

11 Again, in the OECD, it's fairly
12 quite interesting, like Western Europe is like
13 sort of zero population growth on average.
14 You've got your Italys and the ones that are
15 actually declining, your Japans are declining.
16 And then you have some that are growing a
17 little bit. But most of the OECD, most of the
18 developed world is sort of zero population
19 growth. The parts that aren't developed
20 world, E-D, not I-N-G. And the exceptions
21 would be Canada, the United States, and
22 Australia. Those are the three that have

1 population, continued population growth.

2 Then the industrial renaissance, I
3 think the answer is yes and it's in there.

4 It's one of the reasons why we have a lot of
5 natural gas consumption. The electricity that
6 goes along with it is in there.

7 So it's like the spaghetti sauce
8 commercial. I don't know if you're of the
9 same generation as me, little Tony running
10 through the streets of Boston and there's
11 something about "does it have green peppers?"
12 It's in there. "Does it have onions?" It's
13 in there. "Does it have basil?" It's in
14 there. So like it's in there. It may not be
15 right. It may be different than exactly the
16 way you would put it in there. We thought
17 about it. Thinking about it and being able to
18 predict it are two different things.

19 MR. NARULA: My name is Ram
20 Narula, an energy consultant. Again, I want
21 to thank you also for the nice presentation.
22 My question is that the price differential is

1 certainly a huge factor in the decision making
2 of any utility. When other -- taking account
3 of the potential of supply interruptions due
4 to inclement weather, sabotage, or other
5 untold reasons. Since this is not
6 quantifiable, I'm assuming your projection has
7 no way of accounting for that in the decision
8 making. Or maybe it is. That's my question.

9 DR. GRUENSPECHT: You know,
10 obviously, there's value in diversity
11 portfolio, whatever. Of course there's a lot
12 of coal in the mix already, so I mean I'm not
13 saying that putting a value on diversity
14 doesn't necessarily add to coal -- oh, we need
15 more coal because we have to put a value on
16 diversity. You know, we kind of try to
17 represent it in that we don't do sort of knife
18 edge type of optimization. We don't treat our
19 energy projections like it was an LP where
20 you'd have what we call penny switching where
21 everyone runs from one thing completely to the
22 other thing.

1 In fact, we have the coal --
2 again, the existing coal plants, I mean the
3 people who really don't like these projects
4 are the people who don't like coal because
5 they kind of think like it's all going to go
6 away. It's all going to be some new
7 technology. It's all going to be some -- and
8 I guess our view it's not that way, that
9 certainly as a fuel used in existing plants
10 under current laws and policies like it's
11 going to be very hard to displace this stuff
12 because it goes \$30 a megawatt hour on
13 average. What does it say on the TV
14 commercials, "your results may differ."
15 "Don't try this at home." Whatever. But it's
16 pretty hard to find some new generating
17 technology that is going to compete well with
18 \$30 a megawatt hour.

19 Again, the policies, if it's \$30 a
20 megawatt hour after you spend X hundred
21 million dollars on some type of equipment and
22 you don't know whether on top of that a few

1 years down the road there's going to be some
2 kind of carbon policy then that's different
3 again. So -- but I'm not sure that diversity
4 argument -- it's in there. We try to kind of
5 reflect it in some way, but in terms of
6 dealing with it by sort of having -- taking
7 the sharp edges out of everyone running from
8 one thing to the other for a penny difference
9 and stuff, but over the in terms of an
10 explicit model of how different fuels are
11 perceived of in terms of security, you know,
12 I think that's probably a little too ambitious
13 for us.

14 MR. NARULA: I guess what I
15 neglected to mention was also the fact that
16 the coal-fired power plants generally have 30
17 to 90 days of supply at hand to account for
18 those times where it's needed minute by minute
19 or hour by hour.

20 DR. GRUENSPECHT: I guess. It's
21 true. I think it's -- so. That's true.
22 Let's leave it at -- it's the truth, so let's

1 leave it that way.

2 MS. GELLICI: One last question
3 from Sy and we'll wrap it up.

4 MR. ALI: Sy Ali with Clean Energy
5 Consulting. My question pertains to nuclear.
6 You're showing from 19 percent to 70 percent?

7 DR. GRUENSPECHT: Yes.

8 MR. ALI: Does that include the
9 new small modular reactors, the high
10 temperature gas reactors consideration in it?

11 DR. GRUENSPECHT: It is very hard
12 to -- you know, so far at least in our
13 framework what that technology -- again, it's
14 very early in that technology, so how you
15 characterize that technology is tricky. But
16 for our framework what it gives you mostly is
17 the ability to be small and modular. It's not
18 like it's a lower cost per KW than the big
19 stuff. So being small and modular is an
20 advantage, but on the other hand like with the
21 kind of gas price -- again, now you're in a
22 new versus new world so if you wanted to build

1 something new in our framework you build gas
2 because the gas -- the combination of the kind
3 of gas prices that we have which are rising,
4 but they're still -- the guy that I -- well,
5 I like all my utility friends, but John Rowe
6 who is like retired, I guess, CEO of Exelon,
7 he kind of said basically if we're not talking
8 about natural gas prices above \$7, a million
9 BTU, kind of forget about nuclear. It's just
10 not going to hunt. The dog won't hunt.
11 Especially without subsidies. Again, we
12 allow, we have the subsidies that are in law
13 now, so we have the first six gigawatts,
14 getting the production tax credit.

15 We have the plants that are going
16 to get the loan guarantees, getting the loan
17 guarantees, but beyond that, we don't generate
18 on our own -- we're not there to say and that
19 will be continued and they'll throw more money
20 at this. So it has to work just on its
21 economic merits. And it just doesn't work
22 against natural gas in this projection of

1 natural gas which some people think is
2 actually a pretty pessimistic view of natural
3 gas. Some people would say it could stay a
4 lot closer to its low point in real terms.
5 And there, again, I don't know what it's going
6 to cost, but we don't have it as a big cost
7 production per KW versus other technology. We
8 have the significant advantage of the smaller,
9 the smaller chunks.

10 MR. ALI: The nuclear group with
11 DOE projects lower --

12 DR. GRUENSPECHT: That's great.
13 They are a lot of my good friends. It's
14 wonderful. As I said at the beginning, you
15 know, my views should not be construed as
16 representing those of the Department or other
17 federal agencies. We can go back and look at
18 what fossil energy had in mind about -- and
19 I'm not saying we're right.

20 Let me be clear. Strong as I
21 possibly could say we can easily be wrong, but
22 I can tell you you can go back and look at

1 what the nuclear people said about Gen III+
2 reactors. And you can look at how many coal
3 plants the nettle was carrying in terms of
4 what would be built.

5 And again, and I'm not like I live
6 in a glass house, so I'm not going to throw
7 too many stones, but don't -- you know,
8 there's a reason why EIA was set up the way it
9 was. And we talk with our friends in fossil
10 and in nuclear and in energy efficiency and
11 renewable energy, you know, who have huge
12 amounts of renewable -- and they all say these
13 things. If you added them all up, you know,
14 either the U.S. would be consuming six times
15 as much electricity as we are or that's not a
16 constraint that the programs have to deal
17 with. So I don't want to -- they have
18 important roles. They're developing the
19 technologies of the future. They're
20 developing all this stuff. But like -- you
21 know, we talk with them. We work with them.
22 We listen to them. We take what they say

1 seriously, but we certainly don't feel
2 obligated to pencil it in. And you couldn't
3 make a consistent projection if you did, I'll
4 tell you that. If you took the stuff from all
5 the programs and put it together, no way. So
6 how do you like that? That's a little bit of
7 the thing -- that is probably an example of
8 something that you would rather not have in a
9 verbatim transcript.

10 (Laughter.)

11 But with that, I better stop.

12 (Applause.)

13 CHAIR EAVES: Thank you, Howard.

14 We certainly appreciate your comments and look
15 forward to working with you and your staff in
16 the future.

17 Next, I'd like to call up Jeff
18 Wallace, our Vice Chair of National Coal
19 Council to introduce our next speaker.

20 Jeff?

21 VICE CHAIR WALLACE: Thank you,
22 John. I appreciate the opportunity to be here

1 this morning to introduce Robert Bryce, the
2 Senior Fellow at The Manhattan Institute.
3 Robert is one of America's prominent energy
4 journalists. He's a Senior Fellow with the
5 Center for Energy Policy and Environment at
6 The Manhattan Institute. He's the author of
7 four books: first book, Pipe Dreams: Greed,
8 Ego, and the Death of Enron, was his first
9 book. Second, The Cronies: Oil, The Bushes,
10 and the Rise of Texas, "America's Superstate".
11 Third was Gusher of Lies: The Dangerous
12 Delusions of "Energy Independence". And his
13 most recent book from 2010, Power Hungry: The
14 Myths of "Green" Energy and the Real Fuels of
15 the Future.

16 He appears regularly on media
17 outlets ranging from BBC to CNN to Fox. He
18 lives in Austin, Texas with his wife, Lorin,
19 and their three children and he's an apiarist.
20 I had to look that up this morning. That's
21 what some of us might call a beekeeper. Thank
22 you.

1 (Applause.)

2 MR. BRYCE: Morning. Three points
3 to make in about 20 or 25 minutes. First, I'm
4 going to talk about scale and I'm going to
5 spend a lot of time talking about scale.
6 Second, I'm going to talk about 40 years after
7 the OPEC embargo, and then finally, coal and
8 electric demand.

9 So first, pop quiz, I hope you all
10 studied. Who can name the country which since
11 1985 has had the biggest percentage increase
12 in CO2 emissions? Anyone? China is a good
13 guess. Any others? Thailand.

14 Which country over that same time
15 period has had the biggest percentage increase
16 in electricity use? It's Vietnam.

17 Which country has had the biggest
18 percentage increase in coal consumption?
19 Indonesia.

20 Why do I bring these three
21 countries up? Because to me, they go to the
22 heart of this entire discussion that we've had

1 now for the last decade, in fact, more than
2 the last decade over CO2 emissions, carbon
3 caps, carbon taxes, etcetera. Those three
4 countries have a combined population of 400
5 million people. They have an average per
6 capita GDP of less than \$6,000. Their average
7 per capita GDP is roughly half that of the
8 global average GDP per capita and roughly one
9 sixth of what we have here in the United
10 States.

11 Thailand, Vietnam, and Indonesia
12 in my view go to the heart of this entire
13 discussion. They go to the heart, in my view,
14 of the inanity of a lot of this discussion
15 about CO2 and carbon caps. Those three
16 countries in my view represent exactly the
17 views of the developing world as to why they
18 will never, and I do mean never, accept any
19 kind of carbon tax, carbon limits that would
20 in their view then limit their ability to grow
21 their economies and therefore bring their
22 people out of the dark. Those three countries

1 represent, in my view, the nut of the entire
2 argument which is if you think CO2 is bad,
3 then what? What is your answer? Because
4 those three countries are, in fact, turning to
5 coal in a major way.

6 I'm not here to argue the science
7 on CO2 one way or the other. I am a resolute
8 agnostic when it comes to this issue of
9 climate change. And yes, there's no question
10 CO2 is a greenhouse gas, absolutely. What's
11 the right concentration? I have no idea. We
12 can talk about albedos, forcings, global
13 cooling, the Maunder minimum, all these
14 different issues, solar sunspots. We can talk
15 about all those issues, in fact, and we have
16 for now more than a decade.

17 The key question is if you think
18 CO2 is bad and many people do, then what?
19 What will you say in Hanoi? What will you say
20 in Jakarta, in Bangkok, in Beijing, in Mumbai?
21 What's the message for those people? You
22 can't develop your economies the way we

1 developed ours? You can't use coal to develop
2 your economies even though we did? That's the
3 nut of the discussion. And yet we never hear
4 from the green left and make no mistake, it is
5 well represented in this administration in the
6 United States. The green left, Greenpeace,
7 Sierra Club, Natural Resources Defense
8 Council, etcetera, they never want to discuss
9 the numbers. They never want to discuss well,
10 what's the future for these countries? What's
11 the future for their coal-fired generation?
12 And instead, what they've been effective in
13 doing is putting pressure on administrative
14 policy here in the United States and we saw it
15 just a few months ago where the Export-Import
16 Bank and the Overseas Private Investment
17 Corporation announced that they would not
18 provide financing for a new coal-fired power
19 plant in Vietnam. Forget that it was going to
20 help U.S. industries export some of their
21 technology. It was coal is bad. And we don't
22 care where it's built. And their message was,

1 in my view, we don't care if the Vietnamese
2 stay in the dark. We're opposed to coal.

3 The problem, ladies and gentlemen,
4 is the tyranny of big numbers, the problem is
5 a problem about scale. But you will never
6 hear the scale discussion from Greenpeace,
7 Sierra Club, etcetera. By the way, a lot of
8 those groups don't like me. That's fine.

9 (Laughter.)

10 You can't be friends with
11 everyone. And if you were, what fun would
12 that be?

13 The problem is the tyranny of big
14 numbers. Over the past decade alone, global
15 energy consumption has increased by 28
16 percent. It has increased by 53 million
17 barrels of oil equivalent per day. The
18 increase is six Saudi Arabias. Since the
19 '70s, the Saudis have been producing 8.2
20 million barrels of oil per day on average. So
21 what I like to do is make these units simple.

22 Howard talked about quads, okay.

1 How many of you people understand what a quad
2 is. Okay, that's not very many. Well, it's
3 172 million barrels equivalent. Well, that
4 rolls off the tongue. A quad is roughly a
5 trillion cubic feet of natural gas. A quad is
6 roughly one exajoule. That's a billion
7 billion joules.

8 Okay, well, the public doesn't understand
9 that. Not a lick of it. What we use globally
10 is 250 million barrels of oil equivalent a day
11 from everything, coal, oil, natural gas,
12 biomass, nuclear, hydro, etcetera. It's 30
13 Saudi Arabias. The public doesn't understand
14 watt hours. They don't understand kilowatt
15 hours, quads, joules, exajoules. They don't
16 understand it. But they do have a feel for
17 what oil is. They hear that price quoted more
18 than perhaps any other commodity. And they
19 bought oil most of them by pumping fuel into
20 their gas tanks. So I try and normalize
21 around oil equivalents because the public has
22 the best grasp of that unit, the better grasp

1 of that unit than they do of any other.

2 We're using 250 million barrels of
3 oil equivalent. That's 30 Saudi Arabias. We
4 get ten Saudi Arabias in the form of oil, nine
5 from coal, seven from natural gas, two from
6 hydro, one and a half from nuclear, and one
7 half of one Saudi Arabia from all the
8 political darlings of the moment, solar, wind,
9 biofuels, and biomass. So again, we can talk
10 about CO2 being good. We can talk about it
11 being bad. I'm bored with the tribalism. I'm
12 bored with the arguments. I'm bored with the
13 are you on Team Catastrophist or are you on
14 Team Denier? Are you an Al Gore acolyte or do
15 you work for Exxon Mobile or even worse maybe
16 the National Coal Council?

17 (Laughter.)

18 That's the discussion now, which
19 team are you on? That's the entirety of the
20 discussion we're having now. What side are
21 you on? Do you believe in CO2 being bad or do
22 you think it's good? Do you think it makes

1 plants greener or do you think it leads to
2 catastrophe? Never mind the latest IPCC
3 report which really dialed back a lot of their
4 projections about what they thought might
5 happen. Not a word in there about this
6 having, this is causing more extreme weather.
7 No, not a word. Look at it. But again, I'm
8 bored with the tribalism. Let's talk about
9 the numbers. The Greenpeace, Sierra Club, the
10 rest of them, don't talk about the numbers
11 because they know to do so means losing the
12 argument.

13 I appreciate Jeff mentioning my
14 latest book, Power Hungry. I brought a copy.
15 Tell your friends. Tell your neighbors. You
16 don't have to read it. You just have to buy
17 it.

18 (Laughter.)

19 All right. Move on. Scale,
20 scale, scale. Over the past three decades
21 global electric demand has increased by 450
22 terawatt hours a year. Four hundred 50

1 trillion watt hours per year has been the
2 average in annual increase in electricity use.
3 What does that mean? It's one Brazil of new
4 demand roughly every year for the last 30
5 years. And if you look at the projections
6 from IEA, EIA, Exxon Mobil, it's remarkable
7 how uniform they are in projecting another
8 Brazil per year of new demand through 2035.

9 Fine. Let's assume they're right.
10 What would it take just to meet incremental
11 demand if we were to use solar? Now these
12 numbers are available, easily available. You
13 can get them from the BP Statistical Review.
14 Remember, the target is just to meet
15 incremental demand of 450 terawatt hours per
16 year.

17 Let's look at solar. Germany has
18 invested tens of billions of dollars in
19 photovoltaic capacity. They now have 33,000
20 megawatts of solar capacity. In 2012, that
21 33,000 megawatts, 33 gigawatts, produced 28
22 terawatt hours of electricity. Math is simple

1 then. Just to meet incremental demand, not to
2 displace any coal or hydro or nuclear or
3 natural gas, globally, we would have to
4 install 16 times as much solar capacity as
5 Germany now has just to meet incremental
6 demand.

7 What about wind? Well, I'm
8 hopeful for solar. I have solar panels on the
9 roof of my house in Austin, Texas, 3200 watts.
10 Just to be clear, when it comes to energy
11 subsidies, I'm opposed to all subsidies. We
12 should have energy competing fair field, no
13 favor, no subsidies for anybody. So I'm
14 opposed to subsidies unless I'm getting them.

15 (Laughter.)

16 The City of Austin paid two thirds
17 of the cost for my solar panels, so what am I,
18 an idiot? Yes, I took the money. Now my
19 neighbors walk by and say love your solar
20 panels. And I say thank you, you paid for
21 them. I'm hopeful for solar. But solar's
22 contribution on a global scale or even in the

1 U.S., it's infinitesimal. It's lost in the
2 decimal dust. It doesn't matter.

3 What about wind? I'm bearish on
4 wind because of basic physics. The power
5 density of wind energy is one watt per square
6 meter, basic unit in physics. What is power
7 density? It's a measure of energy flow. It
8 can be harnessed in a given area, volume, or
9 mass. I talk about it a lot in Power Hungry.
10 I talk about it a lot in my next book which
11 will be out next May.

12 So the power density of one watt
13 per square meter, what would it take to
14 replace coal-fired capacity in the United
15 States? Now it's roughly 300 gigawatts. How
16 much land would it take to replace that 300
17 gigawatts of coal in the United States with
18 wind? It would require 300 billion square
19 meters, 300,000 square kilometers. It's a
20 land area roughly the size of Italy. And
21 because of the noise wind turbines produce,
22 and this is real and this is a problem,

1 because of the noise wind turbines produce,
2 you couldn't have any people living on that
3 Italy-size piece of territory.

4 Last year, all the wind turbines
5 on the planet provided the equivalent of 2.4
6 million barrels of oil equivalent per day.
7 Last year, coal demand increased by 2.6
8 million barrels of oil equivalent per day.
9 Therefore, just to match the growth in coal
10 demand and I made this point in a piece I had
11 in The Wall Street Journal last month, just to
12 match the growth in global coal demand would
13 require the duplication of the entire existing
14 global fleet of wind turbines every year.
15 That's roughly 285,000 megawatts. Again, the
16 land area requirements would be again roughly
17 a space the size of Italy. This is not going
18 to happen. It's not going to happen because
19 we don't have a lot of extra land and second,
20 we hear a lot about Josh Fox and Yoko Ono here
21 in the United States opposing natural gas.
22 It's nothing, nothing compared to the global

1 backlash against the wind energy business.

2 The European platform against
3 wind, you can look it up, epaw.org, more than
4 600 anti-wind groups in Europe. Look what's
5 happening in Ontario, 75 municipalities in
6 Ontario out of 400 some that they have anti-
7 wind ordinances on their books. Here in the
8 United States, look at what's happening in New
9 York State. Look at what's happening in West
10 Virginia. A recent lawsuit filed against a
11 new wind project because again of the noise
12 produced by these wind turbines. This is a
13 real problem.

14 If you like, Google Dave Enz. I
15 also have his statement on my website,
16 robertbryce.com. Dave Enz, E-N-Z is his last
17 name. He's a guy that he and his wife live
18 near Denmark, Wisconsin. They have about a
19 40-acre parcel of land. I checked out his
20 land ownership records. I checked him every
21 way that I could. He and his wife are now
22 living in an RV after they had a bunch of wind

1 turbines built -- some of them as close as
2 2,000 from their home. They couldn't stand
3 the noise. He's a wind energy refugee and yet
4 we hear over and over and over again wind
5 energy is green. We hear over and over wind
6 energy is green and yet this is an industry
7 that has been exempted by the Obama
8 administration, and the Bush administration
9 before it, from the enforcement of two of
10 America's oldest and strictest wildlife laws,
11 The Eagle Protection Act and the Migratory
12 Bird Treaty Act.

13 A new study just came out in
14 September that showed that over the last
15 several years the wind energy sector has
16 killed more than 80 eagles and the study
17 doesn't include the hundred or so golden
18 eagles that are being killed every year at
19 Altamont Pass in California. And they're
20 killing several bald eagles.

21 The oil and gas industry and the
22 electric utility industry has been routinely

1 prosecuted under those two laws by the Obama
2 administration for killing eagles and the wind
3 industry has not been prosecuted even once.
4 This is a pernicious double standard and it
5 sets me on fire. I've been writing about the
6 Migratory Bird Treaty Act since the 1980s.
7 And the U.S. Fish and Wildlife Service brought
8 more than 200 cases against the oil and gas
9 industry in Oklahoma, Texas, and New Mexico
10 and rightly so. They were operating badly.
11 They were having open oil pits. And the birds
12 were being killed in these open oil pits and
13 they went after them hammer and tongs.

14 And yet today, despite widespread
15 evidence, despite over half a million birds
16 being killed, despite the fact that they're
17 killing on the order of 800,000 bats a year,
18 the wind energy business has never faced a
19 single prosecution. And instead, the Obama
20 administration is writing, get this, 30-year
21 permits that will exempt industry projects
22 from prosecution under those laws. And the

1 Federal Register just in September there was
2 an application for a five-year permit to allow
3 eagle kills by a wind project in California.

4 The First Continental Congress put
5 the bald eagle on the Great Seal of the United
6 States in 1782 and yet we have now carved out
7 a special class of citizens in this country
8 which allows them to kill our national symbol.
9 Pardon me for going all Joel Osteen on you
10 here. But this just makes me crazy.

11 (Laughter.)

12 Now scale. Solar, wind, and
13 biofuels cannot even keep pace with growing
14 demand much less replace significant amounts
15 of hydrocarbons or nuclear. CO2 has been the
16 environmental issue of the last decade. We
17 had Al Gore winning the Nobel Prize, the
18 Academy Award and an Emmy. We had the hockey
19 stick and yet what happened? Global CO2
20 emissions rose by 32 percent. Why? Because
21 of Thailand, Indonesia, Vietnam and I haven't
22 even mentioned China in that group.

1 CO2 emissions in the Middle East,
2 up 57 percent; in Asia, up 44 percent; Africa,
3 up 30; Europe, up 1 percent. And here's a
4 fact you will hear and I do mean never from
5 Greenpeace, Sierra Club, etcetera. Over the
6 last decade, U.S. CO2 emissions could have
7 gone to zero. Now remember, the U.S. is
8 leading the world in CO2 emissions reductions
9 largely because the natural gas business is
10 displacing large amounts of coal. The U.S. is
11 leading the world in CO2 emissions reductions,
12 but over the last decade U.S. CO2 emissions
13 could have gone to zero and yet global CO2
14 emissions still would have increased by about
15 10 percent or 2.6 gigatons, 2.6 billion tons.

16 Therefore, why in the world, given
17 the fact that we're leading the world already
18 in CO2 emissions reductions and second, that
19 any moves that we make in the United States
20 will have effectively no impact on CO2
21 emissions globally and for the wind energy
22 business, now claiming they cut CO2 emissions

1 by 80 million tons in the U.S. which gives us
2 a whopping reduction of 2/10ths of 1 percent
3 of global CO2 emissions reductions, why would
4 the U.S. take some dramatic move of a carbon
5 tax, a carbon cap, etcetera to reduce its CO2
6 emissions? We're already leading the world.
7 It makes no sense at all.

8 Okay, let me take a break now and
9 calm down. I'm going to get all fired up
10 here. So Howard mentions Yoda. My favorite
11 Yoda quote is, "Do or do not, there is no
12 try." Kind of deep.

13 OPEC. Forty years ago last month,
14 OPEC announced that it was raising the price
15 of oil by 70 percent to what was a staggering
16 price of \$5.11 a barrel. It was October 16,
17 1973, the following day, they announced an
18 embargo. Well, what has that embargo meant?
19 Well, what we have seen in U.S. energy policy
20 is a lot of nationalism and what the embargo
21 was for the OPEC members was symbolism. They
22 knew that the embargo and the price hikes were

1 not going to be effective. They knew that
2 from the beginning.

3 Further, what was happening before
4 the embargo? U.S. gasoline stations were
5 shutting down because of price controls
6 imposed by the Nixon administration. You
7 never see this. You never hear about this.
8 It's the reality. The gas lines that we saw
9 in the wake of the embargo were not due to a
10 shortage of oil. They were due to price
11 controls imposed by the Nixon administration.
12 These are the facts. But oh, you see on the
13 news, oh, the embargo and it's 1973 and you
14 see invariably gasoline lines. Oh, it's those
15 darn Arabs. They messed us up and we can't
16 let that happen again.

17 So what do we have now? We have
18 distorted energy policy. And the best example
19 of that is the corn ethanol scam. The U.S. is
20 now consuming 40 percent of its corn crop.
21 That's 15 percent of all global corn
22 production, 5 percent of all global grain in

1 order to produce the energy equivalent of
2 6/10ths of 1 percent of global oil demand.
3 The U.S. is currently producing 550,000
4 barrels of oil equivalent per day in the form
5 of primarily corn ethanol, 550,000 barrels of
6 oil a day after nearly 40 years of subsidies
7 for the corn ethanol scam.

8 Last year alone, U.S. oil
9 production increased by 800,000 barrels per
10 day. In one year, because of ingenuity in the
11 upstream oil and gas industry, production
12 increased by more than the entire contribution
13 of all biofuels in the United States, despite
14 the fact that the U.S. is now consuming in the
15 terms of corn twice as much corn as is grown
16 in the EU or almost as much corn as is
17 produced by Brazil, Mexico, Argentina, and
18 India combined. We are burning food to make
19 motor fuel and I know I said I was going to
20 calm down. This is madness. This is the kind
21 of idiocy that meets foolishness coming the
22 other direction. And it's largely because of

1 the nationalism that started after the OPEC
2 embargo.

3 What has been the other part of
4 this is energy independence. We've heard this
5 over and over about this relentless idea that
6 foreign oil is bad. Foreign oil, we're going
7 to die at the hands of Hugo Chavez, rest his
8 soul, over the Arabs or whoever else. Well,
9 what's happened since 1973? The OPEC
10 countries sold us their oil. They stayed
11 poor. We got rich. Today, the OPEC members
12 have a combined population of roughly 430
13 million people. Their combined GDP is \$3.3
14 trillion, roughly a quarter of that of the
15 United States. Their per capita GDP on
16 average, \$7800. Sixty-two percent of the
17 global per capita GDP is less than one-sixth
18 that of what we have here in the United
19 States.

20 Since 1973, the U.S. has increased
21 its population by about half, nearly tripled
22 its economic output and nearly doubled its per

1 capita GDP and yet during that same time
2 period our oil consumption increased by just
3 seven percent. Energy independence, who
4 cares? In July, EIA data shows the U.S.
5 exported, yes, exported 3.9 million barrels of
6 oil per day, nearly all in the form of refined
7 product and the vast majority of that in the
8 form of diesel fuel. In 1973, we were
9 exporting about 211,000 barrels of oil per
10 day.

11 In July, the U.S. exported oil or
12 oil products to customers in 70 different
13 countries. We live in an inter-dependent
14 world in nearly everything from iPhones and
15 fresh flowers to tennis rackets and tennis
16 shoes. Why do we think we want energy
17 independence when it comes to gasoline or
18 diesel fuel? It's foolishness. It's the most
19 hackneyed phrase in American politics and yet
20 we hear it over and over. We've heard it from
21 every president since Nixon and Barack Obama
22 uses it routinely because it sounds good. Why

1 would the U.S., the world's second largest
2 energy producer behind China and second
3 largest energy consumer, behind China, want to
4 be independent of the world's single biggest
5 market? We're exporting oil. We may be
6 exporting significant quantities of natural
7 gas. We are exporting significant quantities
8 of coal. Why would we want to be independent
9 of the world's single biggest market place,
10 the \$5 trillion a year energy business? It
11 makes no sense whatsoever.

12 The OPEC embargo is over. It was
13 over 40 years ago. Let's bury it, put it to
14 bed. It's not worth talking about any more.
15 It's not relevant today. Let's move on.
16 Okay, finally, coal and electric demand which
17 is I know what you want to hear. We're
18 inundated here in the U.S. about shale gas.
19 And make no mistake, this is a game changer
20 for the U.S. It's a game changer when it
21 comes to energy policy in the U.S., our
22 exports and our imports in terms of industrial

1 demand, what's happening in terms of
2 investment in the United States and the
3 industrial market. It's incredibly important.
4 But the global growth story is coal, make no
5 mistake. And it's been the story since 1973.

6 Since 1973, coal use has grown
7 faster than any other fuel in absolute terms.
8 Globally, oil has increased -- oil consumption
9 has increased by 34 million barrels per day.
10 Natural gas consumption increased by about 39
11 million barrels of oil equivalent per day.
12 Meanwhile, coal use jumped by 44 million
13 barrels of oil equivalent per day. I'm pro
14 nuclear. I'm pro natural gas. But I'm a
15 realist and I spend a lot of time looking at
16 the numbers.

17 Today, all global nuclear
18 production is equivalent to about 11 million
19 barrels of oil equivalent per day. Since
20 1973, just the growth in the coal market has
21 been four times the contribution of all
22 nuclear today. Look at what the IEA, the

1 Paris-based agency, the International Energy
2 Agency, said last May. They said that by
3 2017, global coal consumption could exceed
4 that of global oil consumption. This is a
5 remarkable projection. Will it happen? We
6 don't know for certain. But the last time
7 coal consumption exceeded that of oil
8 consumption in the United States was 1949.
9 I'm hopeful in terms of reducing carbon
10 content of fuels, but the reality is that
11 globally we are carbonizing, not
12 decarbonizing. And why is that? Because of
13 electric demand.

14 Coal use last year in the U.S.
15 fell 12 percent. In Europe, it was up two
16 percent. Germany, by the way, is building
17 11,000 megawatts of new coal-fired capacity.
18 And in Asia, it rose nearly six percent. Why
19 is coal demand growing? It's because of
20 electric demand. Why is coal demand growing?
21 Because globally the supplies are abundant.
22 They're geographically spread out. The fuel

1 is cheap as Howard clearly showed. And
2 further, it's not influenced by any OPEC-like
3 entities. Notice I didn't say the word
4 cartel. OPEC is over. OPEC doesn't matter
5 any more.

6 By 2020, China will add about 30
7 gigawatts of new nuclear capacity. Great.
8 China is adding 30 gigawatts of new coal-fired
9 capacity every year and they will do at least
10 through 2020. Globally, nuclear capacity will
11 grow over the -- I'm sorry, through 2030 --
12 I'm sorry. On a global basis, we're now
13 adding about 72 gigawatts of new nuclear.
14 China is adding nearly 70 gigawatts of new
15 coal every two years. I'm hopeful for
16 nuclear. I want to see the costs on nuclear
17 come down. But right now it's simply too
18 expensive and what are countries like Vietnam
19 doing? They're building coal-fired power
20 plants.

21 China's current coal consumption
22 is roughly equal to all U.S. oil, natural gas,

1 and coal consumption combined. The idea that
2 the U.S. is going to lead the world, if only
3 we show leadership, the rest of the world is
4 going to follow us. Ha. I would love to see
5 the rest of the world follow the U.S. when it
6 comes to the natural gas market and be able to
7 develop their shale as the U.S. has done. The
8 rest of the world, shale is the most abundant
9 form of sedimentary rock on the planet.

10 Algeria, Canada, China, Australia to name just
11 a few, huge resources of shale. But they
12 don't have the rigs. They don't have the
13 rednecks, and they don't have the pipes.

14 (Laughter.)

15 Therefore, their shale development
16 is going to be very slow. Further, they don't
17 have the mineral rights and they don't have
18 the MOPs. I can talk about those factors at
19 length, but I won't, but the shale gale will
20 stay U.S.-centric for a long time to come.

21 We can talk about climate change
22 until the cows come home, the reality is until

1 the countries of the world can find some form
2 of electric generation that undercuts the
3 price of coal-fired generation, coal is going
4 to be the fuel of choice.

5 Electric demand. Howard talked
6 about this briefly. We can look back and
7 project forward. Since 1990, North American
8 electric demand grew by 36 percent. In
9 Europe, it grew by 17 percent. In the Middle
10 East, it's up nearly 300 percent. In Africa,
11 up 119 percent. In Asia, up 276 percent. If
12 you want to look at where in my view the
13 growth of electric demand is going to come
14 from, yes, it's going to be in Asia, but it's
15 also going to be in Africa. With all due to
16 respect to the EIA and IEA, look at the Exxon
17 Mobil energy outlook. There are outliers when
18 it comes to forecasting and I know some of the
19 guys at Exxon that do this work. They're
20 outliers. Look at their projections for
21 Africa. They are totally different from what
22 you see from BP, EIA, IEA. They see the

1 demographic growth in Africa and what the
2 markets in Africa for energy being incredibly
3 robust in the decades ahead.

4 A quick point on policy. We now
5 see in the U.S. what is clearly a war on coal.
6 Make no mistake about it. But it's
7 interesting if you think back historically
8 what I think is a repeat of some bad history.
9 In 1978, we had the industrial fuel --
10 Industrial Power Plant and Fuel Use Act which
11 outlawed the use of natural gas for new
12 electric generation with the view that we had
13 a shortage of natural gas in the United
14 States. We had this idea of shortage, in
15 fact, even up until 2005 when Lee Raymond who
16 was then the chairman of Exxon Mobil said
17 there's no more natural gas to be found in
18 North America. Well, that was wrong.

19 (Laughter.)

20 Much to your chagrin, I'm sure.
21 The Powerplant and Industrial Fuel Use Act was
22 really a law that was created to favor the

1 coal industry and it did. But it was a very
2 narrow view of technology, very narrow view of
3 markets and what happened? Well, it was
4 repealed a few years later. And now the bias
5 is towards natural gas and a bias against the
6 coal-fired sector.

7 Look, I'm pro natural gas. I'm
8 pro nuclear. But more importantly, I'm pro
9 cheap, abundant, reliable. And what I fear
10 now what we're doing in the United States is
11 outlawing coal even though the U.S. isn't the
12 Saudi Arabia of coal, we're the OPEC of coal.
13 We have 900 billion barrels of oil equivalent
14 in the form of coal resources here in the
15 United States. The entire proved reserve base
16 in OPEC is 1.2 trillion barrels. So now we're
17 going to outlaw this form of energy even
18 though we have it not just in abundance, we
19 have it in super abundance.

20 The issue globally is electricity
21 availability. What I am for is bringing
22 people out of the dark and into the light.

1 Africa is called the Dark Continent. Why?
2 Because it's dark. A billion Africans use
3 about the same amount of electricity as 35
4 million Canadians. Love Bono. Love U2. Man,
5 take some generators over there with you. The
6 essentiality of electricity to modernity is
7 incontrovertible. The countries that have
8 cheap, abundant, reliable flows of electrons
9 are the ones that flourish in the modern
10 economy. They're the countries that have
11 manufacturing. They can have schools that can
12 grow their economies and literally bring their
13 people out of the dark. That's the difference
14 between the wealthy and the poor.

15 I don't use PowerPoint, but I'm
16 going to show you one slide from Power Hungry.
17 It will be a table showing you the top 20
18 countries ranked by GDP and the top 20 ranked
19 by electric generation. The correlation is
20 almost one to one. The goal we should have on
21 a global basis in energy policy is to make it
22 cheap, abundant and reliable. We're going to

1 reduce CO2 emissions. Not until we find
2 something that's cheaper than coal on a
3 megawatt hour basis. It's simply not going to
4 happen because countries like Vietnam,
5 Indonesia and Thailand and China, India, South
6 Korea, you name it, are going to continue
7 making the choices that benefit their
8 economies. And the choices that benefit their
9 economies are those that give them cheap,
10 abundant, reliable flows of electrons. That's
11 the difference between the developing world
12 and the rich countries. Electricity is the
13 difference. Right now, they're choosing coal
14 and I don't blame them. And that trend, I
15 think, is going to continue. But until we
16 have a policy that focuses on cheap, abundant,
17 reliable, I think the policy is going to
18 continue to be distorted and show this
19 favoritism toward very small niche players and
20 some of that is a result of the OPEC embargo.
21 And some of it is just the result of very
22 effective rent-seeking industries, regardless

1 of how many birds they might be killing.

2 Thank you. Appreciate it.

3 (Applause.)

4 MS. GELLICI: We have time for a
5 couple of quick questions for Robert.

6 MR. BRYCE: I have too many
7 opinions to keep them all to myself.

8 DR. GRUENSPECHT: Remember,
9 Robert, verbatim transcript.

10 MR. BRYCE: You know, it's okay,
11 Howard. I don't have to have any disclaimers
12 on mine. My opinions are all mine and you can
13 have as many as you want. I've got more and
14 if you want to meet after and argue about it,
15 I'll meet you afterward. I'm here all day.
16 There's no sequester for me or shutdowns or
17 Ted Cruz. It doesn't bother me.

18 MR. ALI: Sy Ali. I enjoyed your
19 presentation. Talking about wind, I'm
20 familiar with the wind farm in northwest
21 Indiana where a friend of mine his father gave
22 up farming to get the subsidy that's being

1 provided to him, \$3,000 per acre per year. He
2 says his father couldn't make that much money
3 farming. And the irony is the wind farms are
4 there, they're not tied into the electrical
5 system. They're generating -- they're just
6 turning.

7 (Laughter.)

8 At most, you get about 20 percent,
9 even on a windy day. I have driven by there
10 many times. You see about 20 to 23 percent of
11 the farm wind mills turning. I don't see the
12 benefits for the country from all that
13 investment and subsidies.

14 MR. BRYCE: Well, again, I don't
15 know about what's happening in Indiana. I've
16 heard about them building wind turbines and
17 not hooking them to the grid, but the problem
18 fundamentally and the reason I get so
19 exercised about this is this is not about my
20 opinion. It's not about what I feel or
21 whether I think CO2 is good, bad, or
22 different. It's basic physics and fundamental

1 math.

2 The problem is the power density
3 number. That's it. Game over. We win, you
4 lose, go home. It's one watt per square meter
5 and I can back that number up with six
6 different studies. I write about it in my
7 next book, Smaller, Faster, Lighter, Denser,
8 Cheaper. Wind energy is a loser and so is
9 biofuels.

10 If we're going to progress, we
11 have to have sensible energy policy, not
12 religious energy policy and that's what we
13 have now.

14 MR. ALI: I enjoyed your article
15 in The Wall Street Journal a couple of weeks
16 ago.

17 MR. BRYCE: Thank you.

18 MR. GABBARD: Rob Gabbard with
19 PPL.

20 MR. BRYCE: Hi.

21 MR. GABBARD: Good morning to you,
22 Robert. Give me a little color on your

1 feeling on like the policy of ERCOT right now.
2 They seem to be on a dangerous edge here from
3 a competitive -- and you, obviously, very much
4 pro competition. The reserve margin has got
5 everybody a little on edge as well.

6 MR. BRYCE: Well, it's interesting
7 you bring that up. We talked about it a
8 little bit last night. I was talking with Joe
9 Craft about it. In fact, I will in Austin,
10 and what's happened in the state now is what
11 I see happening is very similar to what's
12 happening in not just Texas but also in EU and
13 in California. In the EU, the economists
14 wrote an article, I thought a very interesting
15 one, a couple of weeks ago now about the
16 utilities in the European Union have lost
17 something on the order of half a trillion
18 dollars on market cap.

19 In Texas, we see similar things
20 happening with the utilities and power
21 generators losing money because they are being
22 forced off line and on line at the whim of the

1 wind industry because they're getting this 2.2
2 cents were kilowatt hour production tax credit
3 is allowing the wind industry in many cases to
4 bid negative prices to feed their electricity
5 into the grid, so that they then collect the
6 subsidy. Well, if you have a power plant that
7 you've spent \$100 million or even more on and
8 you have to idle it, or you have to only
9 supply power during peak demand when the wind
10 isn't blowing, well, you've reduced your
11 ability to make money.

12 So now what Texas is doing and I
13 don't remember whether -- I think it's the
14 PUC, they're going to allow capacity payments
15 to the power generators. Well, the EU is
16 looking at the very same situation now. Where
17 Eon, they built a new gas plant somewhere in
18 Germany, if memory serves, just four or five
19 years ago. They're already closing it down
20 because it's uneconomic. The grid needs that
21 plant to be available to come on line when the
22 wind isn't blowing, right?

1 Even the best in Texas, ERCOT
2 counts the nameplate capacity of wind energy
3 at 8.7 percent of installed nameplate
4 capacity. They count 8.7 percent as reliable.
5 They've increased it just recently, maybe 9 or
6 a little bit more than that now. But what
7 we're facing now is this, a real clash,
8 between these very capital-intensive
9 industries, but you have one that is
10 incredibly favored both in terms of dispatch
11 and in subsidy and in mandate and another that
12 is the old line hydrocarbon users who are now
13 saying well, look, we've sunk all this capital
14 in here and we're at a disadvantage to put it
15 politely. So they're saying well, we're going
16 to shut down until you provide us capacity
17 payments. And there's a lot of screaming
18 about it now in Texas, but I think the
19 screaming just is getting started.

20 MS. GELLICI: One last question,
21 Robert.

22 MR. BRYCE: Sure.

1 MR. CHAN: Desmond Chan with
2 Bechtel Power. You mentioned three times in
3 your talk about pro nuclear. What's your
4 outlook with nuclear globally and also in the
5 U.S.?

6 MR. BRYCE: Sure, thank you.
7 Well, I think Howard hit it just right is it's
8 all about cost. The Vogtle plant in Georgia
9 roughly \$6,000 a kilowatt. Talk about Kemper.
10 I know it's a sore point. And a costly one.
11 \$6,000 a kilowatt.

12 The Prairie State plant in
13 southern Missouri is about \$3,000 a kilowatt.
14 Natural gas, you can build for \$1,000. So I'm
15 hopeful for nuclear, but the problem is it's
16 just too darn expensive. And in reality, for
17 U.S.-based generators, coal is still too
18 expensive. Prairie State is probably one of
19 the last big plants that's going to be built
20 and it's triple the cost, the upfront capital
21 cost of natural gas, you know, I'm hopeful for
22 coal in terms of having a diverse mix, but

1 right now it simply costs too much. And it's
2 half the cost of nuclear.

3 Okay, I think I've been told to
4 sit down. Thank you.

5 (Applause.)

6 VICE CHAIR WALLACE: Thank you,
7 Robert. We'll now have a break and reconvene
8 --

9 MR. PALMER: Before we do, this is
10 Fred Palmer from Peabody. We are involved in
11 Prairie State and just for the record, the
12 full operating cost in Prairie State will be
13 like Turk's in Arkansas which is an AEP plant.
14 And it will be normalized by \$55 a megawatt
15 hour, super critical, pulverized coal.
16 Absolutely works. Absolutely economical.
17 Absolutely you'd make that choice today over
18 any natural gas unit anywhere in the country,
19 but for carbon. Thank you.

20 VICE CHAIR WALLACE: Okay, we'll
21 take a break now and reconvene --

22 MS. GELLICI: Let's get back about

1 5 to 11. So about 15 minutes, please. Thank
2 you.

3 (Whereupon, the above-entitled
4 matter went off the record at 10:38 a.m. and
5 resumed at 10:56 a.m.)

6 MS. GELLICI: I'd like to get
7 started with the rest of our program. I'd
8 like to call to the podium, Larry Grimes, who
9 is a legal counsel for the National Coal
10 Council. I neglected to give him time at the
11 beginning of the program to talk to us about
12 some anti-trust details. So we'll take care
13 of that business now before we get started.

14 Larry?

15 MR. GRIMES: Thank you, Janet. In
16 your packet, in my packet, it was the second
17 piece of paper under the agenda. You'll find
18 a one pager front and back. The National Coal
19 Council General Antitrust Guidelines. This is
20 not a topic to generate a whole lot of
21 excitement like our last speaker, but I kind
22 of feel like the guy in the World War II

1 movies had to give a VD speech to the troops
2 to behave or die of consequences.

3 I want to talk about behavior and
4 dire consequences, but I won't show pictures.
5 To sum up, your service here which is so
6 appreciated by the Department of Energy, by
7 those of us in the business and who love the
8 business, does not exempt you from the
9 enforcement of the United States and foreign
10 antitrust laws and state antitrust laws.

11 We've prepared a set of guidelines. This is
12 not specific advice to any of you and if you
13 have questions, you should talk to your
14 counsel, to me, or somebody who can get you
15 into the right mode to be advised. But I'd
16 just like to draw your attention to the bold
17 print, second period which says, "Membership
18 in these organizations, NCC, and NCC, Inc.
19 confers no immunity from federal or state
20 antitrust laws." Full stop, end of story.

21 Most of you have probably had
22 counseling on antitrust laws from your own

1 corporate or business counsel. But those of
2 you who do not, you simply cannot engage in
3 certain kinds of conduct and if you'll study
4 these guidelines and if you have questions
5 call me. It might save you a lot of grief
6 because there are great personal liabilities
7 and liabilities to your affiliations from
8 violating the antitrust laws and just because
9 we're appointed by the Secretary of Energy
10 here doesn't help us if we get over the line.
11 Thank you very much.

12 MS. GELLICI: Thank you, Larry.

13 It's my pleasure this morning.

14 It's still this morning, yes, to introduce Tom
15 Alley, who is Vice President of Generation for
16 the Electric Power Research Institute, EPRI.
17 I'm very delighted that Tom is here with us
18 this morning. We also have representative,
19 Barbara Tyran is here from EPRI as well. We
20 greatly appreciate it. EPRI has been a
21 tremendous supporter of the National Coal
22 Council and has done a lot in terms of

1 supporting our studies that we've done over
2 the years. So we're very grateful for EPRI to
3 be here.

4 Just briefly on Tom, he is
5 responsible for the R&D Team which is focused
6 on research, development, and the application
7 of fossil technologies and that's for both
8 existing and future generating assets. He has
9 over 29 years of experience in the energy
10 industry in both the fossil area and in
11 nuclear.

12 Before joining EPRI, Tom worked at
13 Duke Energy where he was responsible for the
14 evaluation, inspection, and repair of nuclear
15 power plant components. He has a Bachelor of
16 Science degree in Electrical Engineering, and
17 a Bachelor of Science degree in Materials
18 Engineering from North Carolina State
19 University. He is also a Registered
20 Professional Engineer in North Carolina and
21 South Carolina. Again, please join me in
22 welcoming Tom Alley.

1 Tom?

2 (Applause.)

3 MR. ALLEY: Thanks very much.

4 It's certainly my pleasure to be here and
5 thanks for the invitation and opportunity to
6 speak with you today.

7 What I'm going to try to
8 accomplish is to give you some insights on the
9 reality of where the coal fleet is today, the
10 assets that many of our members are asking --
11 the demands that are being asked of those
12 assets and the challenges those assets have in
13 today's energy policies.

14 Is there a clicker up here? Here
15 it is. Sorry.

16 Now one thing that Janet had heard
17 a presentation of EPRI about the power system,
18 the power grid future. So she said hey, can
19 you guys talk about that? I said well, I can,
20 but I'm sort of a PowerPoint guy, so I'm going
21 to try to talk just a few moments about the
22 power system of the future and also try to tie

1 that into power plants and we'll kind of work
2 through some discussions. Some of the slides
3 I have today I'll go through pretty quickly
4 because you've seen them with regards to the
5 energy trends, demand, those sorts of things
6 and we'll try to get pretty quickly to some
7 technology discussions about power plants and
8 I will welcome any questions you may have
9 during this.

10 The power system of the future is
11 certainly changing. The power system we see
12 today it once flowed from central generation,
13 out through transmission, distribution
14 networks to the end users. And what we're
15 seeing now is a lot of two-phased power flows.
16 So we're seeing rooftop solar. We're seeing
17 distributed generation, demand response,
18 energy efficiency. Most of these things are
19 all focused on the right hand side of this
20 chart where the heavy red arrows are. So we
21 see power now going in all different
22 directions across the grid and it's certainly

1 the trend that's going to continue in the
2 future.

3 Where it ends up at the end of the
4 day is obviously questionable. I think there
5 are certain restrictions we're going to hit,
6 transmission build will be one, for instance.
7 You would love to have a lot of renewable
8 energy out there, but when you start looking
9 at what it takes to get wind to the end user,
10 transmission is probably going to be one of
11 those things, one of the barriers that's going
12 to kind of stop this.

13 So where exactly this whole
14 evolution to the system is going to end up is
15 going to be certainly interesting for us to
16 keep an eye on as we go out into the future.

17 But I'm going to talk about the
18 left hand corner here which is the central
19 plant, maybe, and the role of the central
20 plant with regards to this power grid of the
21 future, what the central plants are being
22 asked to supply. I mentioned before I have a

1 number of different externalities and
2 pressures that we see on the central plant
3 today and I want to cover these both briefly
4 and in some level of detail.

5 Fuel availability and pricing,
6 we'll discuss that certainly a little bit.
7 There's been a number of conversations here
8 with regard to natural gas. I'll certainly
9 share some conversations. It's always
10 interesting to me that you come to a coal
11 meeting and before you get 15 minutes into the
12 discussion it ends up being natural gas. So
13 I'll certainly share some comments with you
14 with regard to natural gas and what we're
15 seeing.

16 Renewables, Robert already gave us
17 a pretty good highlight about where renewables
18 are. We do hear a lot of discussion about the
19 impact of renewables on the grid and the
20 intermittent nature of renewables. I think
21 for certain regions of the U.S. that is very
22 true. I think it's true in California,

1 Hawaii, Arizona, maybe a couple other regions,
2 Texas, where you have a lot of wind energy
3 there. But overall, I think renewables still
4 represents a smaller portion of the generating
5 mix. So what we tend to see is that there is
6 a lot of intermittent nature just based upon
7 demand and what the grid is asked to respond
8 to, what the plants are asked to respond to.

9 Right now, currently, I think a
10 lot of this is due to fuel switching and just
11 the everyday demand switch that we see and
12 demands that our customers have on the grid.
13 I think as we look out in the future, we look
14 more to the German model and the Spain model
15 where we see large penetration of renewables.
16 That's certainly going to have an impact on
17 how power plants have to respond to the
18 intermittent nature of all that.

19 Market drivers are certainly out
20 there. Capacity markets have been in the news
21 recently and what capacity markets are doing,
22 I heard some comments about ERCOT now and

1 their capacity margins and payment for
2 capacity, so that's certainly something very
3 interesting.

4 The aging assets of the coal
5 fleet, 70 percent of the coal fleet that's
6 remaining are certainly scheduled to be in
7 service here going off in the future is 30
8 years or older. So we're dealing with older
9 assets. We're dealing with older assets now
10 that many people put quite a large investment
11 in these older assets.

12 So we'll talk about CO2 a bit.
13 What's the likelihood of retrofitting these
14 assets with CO2 technology? Should that be
15 the direction of the future? I think that
16 would be a very hard lift for the industry.

17 So we'll touch on a few of these
18 things. And also water, I think, is very
19 important. I'll touch on that as well. I
20 think water is in many people's mind as far as
21 the regulatory community, environmental
22 community, water is the next air. So we're

1 going to see a significant increase in
2 activities associated with water, something
3 that the industry is going to have to manage.

4 Demand, we've seen this curve
5 already so I won't spend much time on this.
6 What I will say it's very difficult in a low-
7 demand period for people who gather capital
8 dollars and actually invest in the resources
9 that it takes to keep the plants viable. So
10 certainly we think this is the trend that's
11 going to move forward into the future and
12 we've heard some other comments about that
13 from people who are better qualified to answer
14 that question than me. So I do think it's
15 going to put an increased pressure on the
16 existing assets that we have here, because I
17 think at least from a coal plant perspective,
18 there's not going to be many plants built in
19 the next 10 or 15 years with the current
20 environment that we see.

21 I did mention natural gas before.
22 Three years ago, EPRI sponsored our summer

1 seminar. I think, Janet, you were there this
2 year and three years ago we asked and this is
3 a meeting that we have, kind of a think tank
4 meeting we have with industry energy leaders
5 and we just talk about the landscape. We talk
6 about the future and where the energy industry
7 is headed.

8 Three years ago I shared a session
9 on natural gas and we asked everyone there,
10 there was about 125 sea level people in the
11 audience. And we asked them, we asked them a
12 question. We had polling devices and we asked
13 how many of you believe that natural gas is
14 going to be a game changer? This is some sort
15 of a ruse or you really just don't know?

16 At that time, I had about a 30
17 percent split on each of those answers. We
18 went back and asked that question again, this
19 last year, not with the voting tool, but we
20 asked everyone in the audience with regard to
21 natural gas and I think everyone in the room
22 agrees it's definitely a game changer. So

1 we've already heard comments about nuclear.
2 We see delayed nuclear. We see no coal build.
3 We just see an impact in the industry
4 significantly with regards to that.

5 One thing I would say is the
6 impacts of natural gas on the fleet that we
7 have here, the existing coal fleet is
8 certainly being felt and I say this because
9 the price points we area with natural gas
10 right now and coal, we're kind of on the cusp
11 of whether or not it's economical to fire a
12 plant on gas or it's economical to fire a
13 plant on coal.

14 Last year, we saw gas prices that
15 were \$3 less and for the first time in the
16 history that I'm aware of, gas and coal, the
17 non-nuclear dispatching of gas and coal were
18 pretty much equal, about 30 percent each, each
19 one of those generating sources. This year,
20 we think we'll see a little more coal being
21 dispatched. Gas, last time I checked, was
22 around \$3.80, so you start to see the

1 sensitivity of this \$3 to \$4 range that we're
2 in now as to whether assets are being fired
3 with coal or assets are being fired on natural
4 gas, so it's certainly something we need to
5 keep an eye on.

6 I look around the world and what I
7 see is I see those who have gas and those who
8 don't. And the U.S. is very fortunate.
9 Natural gas has certainly been, I won't call
10 it a happy accident, I think it's more design
11 around it than that, but it's certainly been
12 a gift to U.S. energy policy with regards to
13 the framework we set up on carbon and coal and
14 everything else. And gas has given us some
15 relief from all that.

16 Elsewhere in the world, it's
17 certainly not the case. So when you're
18 visiting Europe, you visit Spain, for
19 instance, the gas combined cycle plant
20 capacity factor in Spain last year is nine
21 percent. That 9 percent, 25 percent of that
22 is pretty much by one utility in Spain. So

1 the other utilities in Spain have to basically
2 compete for the scraps as far as natural gas
3 is concerned in the combined cycle fleet.
4 They're asking us now how do I lay the fleet
5 up? How can I disassemble this fleet and move
6 it elsewhere in the world? So they've just
7 kind of given up on gas. So it's a very
8 interesting landscape with regards to where we
9 are with natural gas over there.

10 Something we hear mostly from the
11 Northeast, but there seems to be a continuing
12 concern about the pipeline capacity and
13 whether or not the pipeline capacity is there
14 to deliver the fuel where it's going to be
15 needed when it's needed, particularly in the
16 winter time. When you think about the
17 Northeast has a heavy heating load with gas
18 and there's a lot of natural gas combined
19 cycle capacity in the Northeast, so there's a
20 lot of concerns that what happens if that gets
21 interrupted. What happens if we have a very
22 high heat load and there's not a lot a coal

1 assets left up there. So I think there's some
2 vulnerabilities there and certainly some
3 concerns with regards to gas in the Northeast.

4 Sorry, I'm having trouble with the
5 clicker here. We've already seen this data
6 with regards to fuel sources. I do think that
7 coal is going to continue to be a pretty
8 viable source, both here in the U.S. and
9 abroad. It seems interesting to me though
10 that the international community certainly is
11 watching the U.S. and the gas markets with a
12 completely different interest than we are.
13 They look at it with regards to export and
14 their ability to export natural gas. They
15 also look at natural gas' impact on coal
16 prices here. And so as a result of that, coal
17 prices here have been lower and they're taking
18 advantage of that.

19 We did hear some comments in the
20 previous presentation about CO2 being a global
21 issue, not a local issue. I certainly sign on
22 to that wholeheartedly. So what we're doing

1 here is we're -- certainly people here in the
2 coal industry can answer this question better
3 than I, but we're packing up our low sulfur
4 hard coal bituminous high heat value coal,
5 putting it on barges, sending it to Europe and
6 they are loving it. They are absolutely
7 loving it because gas prices are high. I've
8 already mentioned that they're shutting down
9 their combined cycle fleet and their
10 environmental regulations are a little less
11 stringent than what we're dealing with here.
12 They don't have to regulate on mercury. CO2
13 is not on the landscape for them right now at
14 least. And their NOx emissions limits are a
15 little higher than they are here in the U.S..
16 So they're able to burn this coal and they're
17 getting it at a preferred price.

18 I mentioned NOx. A great example
19 of that is that here in the States there's
20 many folks who are held by regulations and
21 dissent decrees that they have to have their
22 SER and operation whenever the plant is

1 operating. So one of the restrictions we have
2 in turning down the plants to meet this
3 flexibility in the grid is the catalyst and
4 how the SERs operate. We can only turn them
5 down so far before we start to destroy the
6 catalyst.

7 In Europe, because the NOx limits
8 are different, they just put a bypass in. So
9 when they turn the units down, they just
10 bypass the SER and go out the stack. So
11 they're very happy over there. So again, I
12 think until we start to approach CO2 and other
13 pollutants on a more global scale, it's
14 certainly going to be a two-part world.

15 I'm not going to go over this
16 slide. We've already seen this. This just
17 talks about coal fired production. I will
18 make a couple of comments with regards to gas
19 and I think EIA reported their state of the
20 generation business here a couple days ago.
21 I read that report and certainly it reinforces
22 the fact that natural gas is being constructed

1 probably more so than any other energy source.
2 I think it has more to do really with not just
3 the price because it's certainly preferential
4 because of the price, but natural gas is
5 easier to site. It's easier to permit. It's
6 faster construction which makes it cheaper.
7 Investment capital in natural gas plants is
8 certainly lower. I don't see a lot of
9 demonstrations around natural gas plants.

10 Last coal plants I saw people
11 chaining themselves to the earth moving
12 equipment and other things like that. I
13 haven't seen or witnessed that with regards to
14 natural gas. It's low emissions. We all know
15 that. So the CO2 footprint for natural gas is
16 much less. There's just a preponderance of
17 forces here that are pushing the industry down
18 this natural gas road. The industry certainly
19 values diversity and it's something that we
20 keep a very close eye on.

21 The problem here is that I don't
22 know that economically diversity is very

1 easily justified. So folks are looking at the
2 bottom line economics and it's hard to say
3 that I want diversity so I'm going to add 15
4 percent or 20 percent to the cost of this
5 project to give me diversity. So it's very
6 difficult to add this into the economic
7 equations.

8 Another comment about the world
9 energy outlook is that I see two worlds. And
10 I use world in a -- I won't say global term --
11 but I see two worlds. There's a world of
12 cheap gas which is pretty much confined to the
13 U.S. You might throw Russia in there. And I
14 see a world with expensive gas. I see a world
15 that has a high penetration of renewables,
16 Spain, Germany, Hawaii. And I see a world
17 that doesn't quite have that type of
18 penetration of renewables.

19 I see a world where demand is
20 growing. China, India, we heard some of those
21 comments before. And I see a world where
22 environmental policy is more favorable or less

1 favorable to the development of different
2 technologies. So as you look around the
3 world, you will see technologies being
4 developed according to those constraints and
5 maybe many others. So if we look at China and
6 India, the environmental policies are much
7 more lenient there and they're building coal.
8 Demand is on the increase.

9 Probably the toughest market that
10 I'm aware of right now is probably South
11 Africa. They're in a high regulatory
12 environment. They're in a high demand
13 environment. They need megawatts. Their
14 capacity is less than one percent. Their
15 reserve is less than one percent. And they
16 have all these things kind of focused on them
17 together. They're actually exporting their
18 high rank coal and trying to burn the lower
19 rank coal, so there's a very difficult
20 situation for them.

21 This is kind of our rendition of
22 the rec slide as far as what we're looking at

1 in environmental policies. I think many of
2 these things which used to be unknown are
3 starting to get -- we're starting to get some
4 clarity on. Certainly, the solid waste I saw
5 where there's some extra additional pressures
6 on the EPA to make some sort of ruling with
7 regards to waste products for coal combustion.
8 We certainly have seen MATS now and the effect
9 of MATS and we see a number of plant closures
10 associated with that.

11 And we've got to look at new
12 source performance standards. We'll talk very
13 briefly about that because I think everybody
14 here is pretty familiar with new source
15 performance standards. We're still anxiously
16 awaiting a glimpse of what existing source
17 performance standards may look like. That can
18 stand to impact the existing fleet quite
19 significantly.

20 And I've already mentioned water.
21 There's a number of efforts underway right now
22 with regards to water and how we're going to

1 manage water.

2 I've just got a couple of slides
3 on the EPA. I'm just going to move to the end
4 of these because I think everybody here is
5 pretty familiar with all the EPA requirements
6 that we have right now. But a couple of
7 things I'll add to this is many of the
8 considerations that are given for the
9 deployment of the technologies assume, they're
10 going to be ready, assume that the industry is
11 ready to deploy them and it assumes units are
12 operating, wide open and on top of their
13 performance curves.

14 In reality, the intermittent
15 nature of the way that the grids are operating
16 right now, these units are asked to flex,
17 they're asked to turn down, they're asked to
18 vary the way that they operate and certainly
19 when you do that it affects the mission
20 control. So this is going to be a very heavy
21 lift with regards to the industry looking at
22 new source and looking at existing source

1 standards with regards to the EPA and there's
2 a timeline out here with regards to all this
3 and we're certainly keeping a very close eye
4 on it. I'm very anxious to get a glimpse, get
5 some intelligence about the existing source
6 performance standards. I think the new source
7 performance standards is penalizing coal to
8 the point that it's going to be very difficult
9 to build traditional coal under that. And
10 I'll add another comment to that here towards
11 the end.

12 Now to talk a little bit more
13 about research, where EPRI research is headed
14 and what our members value in the research the
15 way we have here is options. And what we find
16 out is unlike other generating sources, each
17 coal unit, maybe even each coal plant is its
18 own entity. It burns a different coal. It
19 has a different boiler design. It has a
20 different turbine. It has different water
21 sources, different cooling. Every plant,
22 maybe even every unit is different. So one

1 solution doesn't fit everything here. So the
2 technologies we have to develop and the
3 technologies we're working on are around all
4 aspects of the power plant. Everything from
5 work force to stack emissions to monitoring to
6 water so that we can provide our members a
7 whole litany of options so they're able to go
8 and pick and choose which option it can.

9 And the goal of our research is to
10 keep that plant viable and make it
11 economically dispatchable and in a few cases
12 maybe even we can take a plant that's
13 earmarked to be closed because of some
14 economic concerns, beneficial economic
15 concerns that research affords that plant,
16 that plant now we may be able to hold it with
17 that asset versus that asset being retired.
18 So the big story here is every plant is
19 different. It's going to take a number of
20 technologies around all aspects of power plant
21 performance and operations in order to
22 maintain the viability of the existing fleet.

1 I've already said the role of the
2 plants are changing. I heard some discussion
3 earlier about capacity factors for coal
4 plants. Certainly the older coal fleets are
5 being retired. So the gigawatts we're seeing
6 now and I think the last number I saw 61
7 gigawatts in the next ten years or so will be
8 retired. Most of those units are around 500
9 megawatts or less. For the engineers in the
10 crowd, most of those were designed with slide
11 rules. So you have subcritical plants.
12 There's lot of design margin. They're robust,
13 they're heavy and they're the plants that
14 we've been using over the course of history to
15 flex according to the demands of the grid.

16 What's going to be left now is a
17 super critical unit. Designed by computers so
18 the wall thicknesses and the design margins
19 and everything else are going to be to the .01
20 decimal point. There's no extra margin.
21 These basically were designed to be your
22 sports cars and we've also in the process hung

1 out on the back of the plant this huge
2 chemical plant and I have a picture I can show
3 you about that. We're going to ask this plant
4 now to be flexible in the way it operates. So
5 it's not going to come on and operate 80
6 percent of the time. I heard that discussion
7 earlier where 80 percent of the plant time,
8 the plant is on, it's going to be running,
9 just humming along. It's going to be asked to
10 drop load at night. It's going to be asked to
11 come off on the weekends. It's going to be
12 asked to shut down during spring and during
13 the fall, may not operate at all.

14 You may shut it down on Monday, I
15 mean on Friday, thinking it's going to come
16 back on Monday and it may not come back for
17 two months. Now from a plant operator's
18 perspective, that's pretty serious because the
19 way you shut the plant down on Monday, if
20 you're going to come back on -- I mean on
21 Friday. If you're going to come back on
22 Monday, you're bottling energy up, you're

1 holding your heat, you're trying to make it so
2 you can come back and all of a sudden, you're
3 not being called on. When you're not being
4 called on, now you have the drain system, the
5 whole way you're going to shut that plant down
6 is going to change.

7 So these newer plants -- newer,
8 they're still around 30 years old, but the
9 newer plants are certainly much more complex
10 to operate, much more complex for our members
11 to put them on the grid and manage those
12 resources in the way that the grid is going to
13 be asked to respond. So it's going to be
14 quite a challenge for the industry to manage
15 a grid associated with all that.

16 Certainly capacity. We've heard a
17 little bit about capacity. Most of the plant
18 closures we're seeing are along the East Coast
19 and there does seem to be some capacity there,
20 some margin for some of these plant closures.
21 So the overall impact, I think other than the
22 operational impact, should be somewhat minimal

1 with regards to that.

2 So I've already kind of mentioned
3 increase ramp rates, the way we operate these
4 units. They're going to be asked to respond
5 quicker. It takes a long time to bring a unit
6 from zero load to 100 percent load and the
7 whole process and procedure you follow to do
8 that. How can we cut that, make it shorter?
9 How can we drop the load shorter? Every time
10 you're doing this, you're dealing with
11 temperatures. You're dealing with the whole
12 systematic approach of the plant and we start
13 to accumulate a lot of damage that way. We're
14 trying to understand and quantify what that
15 damage is. It's quite a challenge to do that
16 because damage that you impact on a plant
17 today, you may not see for five years. So
18 when you start quenching systems, you drop
19 load, and you're dropping temperatures and you
20 start to quench systems and you accumulate
21 damage according to the way that you quench
22 this, you may not see this for five or ten

1 years. So how can we understand that better
2 and how can we put that back into the economic
3 models so that now it can be incorporated in
4 how you dispatch those units and how they
5 supply to the grid?

6 The other thing I would mention,
7 here's a picture I was going to show you
8 before. If you look at this plant and this
9 plant was built in about 1965, '66, '67, the
10 door -- the building with the blue door and
11 the building with the stacks next to that was
12 basically the plant. That's what that plant
13 looked like 40 years ago. Now you see all
14 that off to the right. That's all of our
15 controls equipment and it's all a big
16 chemistry plant and everything else has been
17 hung on the back of this plant now to comply
18 with all the regulations. So the industry has
19 done quite a lot over the course of time and
20 history to comply with the regulations in
21 terms of capital investment and complexity in
22 the plant. These plants are very complex.

1 Another point I wanted to make is
2 that we find out, particularly with
3 environmental controls equipment and the
4 technologies that we're using today that
5 anything we do in the front end of the plant
6 can have a dramatic impact downstream. So you
7 say oh, we're going to control mercury, so
8 we'll use bromine. We'll treat the fuel
9 before it goes in the combustion process with
10 bromine. Great idea. And definitely, you
11 look at charts of mercury and you look at
12 bromine additions and you'll see your mercury
13 falling down quite a bit to where you can
14 comply with the regulation. The issue with
15 bromine now start to corrode your air
16 preheaters and there's corrosion in other
17 components of the plant.

18 So what we're finding out is that
19 anything we do at one end of the plant now
20 cascades its way all the way down through the
21 plant and it can end effects that cause a lot
22 of difficulty with regards to the reliability

1 equipment and how the plant is going to be
2 operated and the maintenance cycles that we
3 see in the plant and the cost of operating the
4 plant. So all these things are
5 interdependent.

6 So if you hear we can control with
7 bromine or we can control with activated
8 carbon injection or we can have SERs,
9 understand with the litany of requirements
10 that you have to meet, these things all cross
11 talk and they have cross effects with the
12 plant. So it's quite challenging.

13 EPRI works with Kirk with regards
14 to looking out into the future with regards to
15 research needs and so I'd haul out a couple of
16 things that we see on the horizon. First of
17 all, more immediate flexibility, reliability,
18 environmental compliance, so the strategy
19 right now is to comply. The strategy is to be
20 flexible and the strategy is to be cost
21 effective. So a lot of focus on cost. A lot
22 of focus on OEM cost as the fossil plants are

1 now asked to compete with other technologies,
2 the answer for that is you need to drive those
3 costs down. So we certainly see a lot with
4 regards to that.

5 CO2 is on the horizon. We
6 continue to get our members, our board, our
7 public advisory committees and others
8 continually tell us do not take your eye off
9 of CO2. So we continue to work with DOE and
10 others with regards to CO2 and trying to
11 maintain that.

12 I also think that in the future as
13 we look ahead at the future, it's going to
14 take new technologies. To think we're going
15 to comply with the regulations that we have
16 today with souped up super critical coal
17 plants probably is not going to happen. The
18 builds that we see in place right now, the few
19 units that are going to be left to complete
20 here probably will be the end of what we're
21 going to see for a while until some other
22 technologies show up on the landscape. So we

1 see oxy combustion. We see chemical looping,
2 gassification, if we can get over the cost of
3 that, obviously. But there's other
4 technologies out there that I think are going
5 to be the key for the coal plants moving
6 forward. So I would leave you with that
7 thought and with that I'll conclude my
8 comments. If there's any questions, if I have
9 time --

10 MS. GELLICI: Thank you very much.
11 We have time for a couple of questions. I've
12 asked our communications chair, David Server,
13 to kind of assist me here. If you would
14 kindly raise your hand if you have any
15 questions for Tom. Thank you.

16 MR. NARULA: Thank you. Ram
17 Narula, energy consultant.

18 Tom, could you give us an idea in
19 terms of as you call the chemical plant which
20 the rest of the world is not using or using to
21 a much smaller scale. How much does that add
22 to the total cost of the power plant?

1 MR. ALLEY: I actually don't have
2 that number. I can't give you that.

3 MR. NARULA: I've heard numbers as
4 much as 45 percent of the cost.

5 MR. ALLEY: I could believe that,
6 but I don't have a number for you. I'm sorry.
7 I don't have that data.

8 MR. NARULA: Thank you.

9 MS. GELLICI: Any more questions?
10 Andy.

11 MR. ALI: Sy Ali with Clean Energy
12 Consulting. In your combined cycle plant, do
13 you see any operation switching from coal to
14 natural gas during the operation periods?
15 They have a month of coal and half the month
16 and natural gas in order to meet the
17 environmental requirements and the economics.

18 MR. ALLEY: You're talking about a
19 plant that can -- a bi-cycle plant is
20 obviously a gas plant. So there are plants
21 that have dual-fuel capability.

22 MR. ALI: Exactly. There are

1 designs that have dual-fuel capability.

2 MR. ALLEY: That's correct. And
3 there's certainly strategies out there that
4 people are exercising, taking a plant that's
5 designed to run on coal or gas and switching
6 that over to gas. And they'll do that if they
7 can comply.

8 The problem is with the MATS,
9 Mercury and Air Toxic Standards, that if they
10 haven't put the investment in the plant which
11 in some place can be half a million dollars to
12 build scrubbers and everything else to comply,
13 they won't be able to burn the coal. So what
14 we see more of is not switching and blending
15 of the coal necessarily. We see people that
16 are taking a plant that was designed to run on
17 both fuels and basically running on gas, 100
18 percent of the time.

19 MR. ALI: Thank you.

20 MS. GELLICI: One last question.
21 Andy in the back there.

22 MR. PATERSON: Andy Paterson with

1 CCS Alliance. Can you shed some light on how
2 much reserve capacity and natural gas turbines
3 from the over build 1995 to 2005 that
4 utilities still have that's maybe 10 percent
5 capacity factor now? We some something like
6 400 gigawatts. It's hard to get a good number
7 of natural gas capacity.

8 MR. ALLEY: Actually, there are
9 some folks here I think can answer that
10 question better. What I can tell you is that
11 --

12 MR. PATERSON: Or capacity factor
13 number.

14 MR. ALLEY: What I'm seeing is I'm
15 seeing that many of the coal plants that are
16 being retired, they're actually repurposing
17 that site for gas. I kind of call it a quiet
18 revolution. You talk to the manufacturers in
19 the OEM as equipment, they're saying we don't
20 see the revenue orders outside the country and
21 that sort of thing, but yet I look at the
22 number of coal plants that are being retired

1 and they go right next door to the coal plant
2 and there's a combined cycle plant, natural
3 gas combined cycle plant.

4 As far as the capacity numbers go,
5 I think there's other people here that can
6 answer that question. I don't have that data
7 for you.

8 MS. GELLICI: Tom, thank you very
9 much.

10 MR. ALLEY: Sure.

11 (Applause.)

12 MS. GELLICI: Next I'd like to
13 call to the podium Divya Reddy. I'm sorry,
14 Divya, I got tongue tied a little bit there.
15 Divya is an analyst with Eurasia Group. If
16 you're not familiar with Eurasia Group's
17 information, I'd highly encourage you to leave
18 a card with Divya. They're one of my go-to
19 resources on analysis on all aspects of the
20 energy industry, very global company, a lot of
21 great information. So I encourage you to
22 visit with her afterwards.

1 As I mentioned, Divya is an
2 analyst with Eurasia Group's Global Energy and
3 Natural Resources practice. She covers
4 metals, mining, biofuels and climate change.
5 She has a master's degree in International
6 Development from Georgetown University and a
7 bachelor's in Economics from Pomona.

8 Prior to joining Eurasia Group,
9 she worked as a research associate at the
10 Council on Foreign Relations. She has also
11 previously worked as an investment banking
12 analyst in the Natural Resources Group at Bear
13 Stearns. She apparently started working when
14 she was about 12, I think, with all that
15 background. But would you please join me in
16 welcoming Divya Reddy.

17 Divya?

18 (Applause.)

19 MS. REDDY: Thanks, Janet. It's
20 good to be here. So I will be talking about
21 the European experience with carbon pricing
22 today. Just a little bit of background in

1 Eurasia Group for those of you who are not
2 familiar which may be everyone. But basically
3 Eurasia Group is a political research and
4 advisory company. So we track political and
5 regulatory developments and make forecasts as
6 they relate to investments globally.

7 So talking about the EU emissions
8 trading system, at a basic level this is a cap
9 and trade program for GHG emissions, primarily
10 CO2 emissions covering the power sector as
11 well as the industrial sector. The program
12 also phased in the aviation sector in 2012,
13 but that's been fraught with problems so for
14 purposes here, we'll just ignore that and
15 focus on the other two.

16 The current target is to achieve a
17 20 percent reduction from 1990 emissions
18 levels by 2020. And the basic mechanics are
19 like any cap and trade program. You introduce
20 a fixed number of allowances into the market
21 in a given year and obligated facilities can
22 either purchase allowances to meet their

1 obligation or actually mitigate emissions from
2 their facilities.

3 The program has so far been broken
4 down into three phases. The first phase was
5 from 2005 to 2007 which was really a pilot
6 phase. The second phase coincided with the
7 Kyoto Protocol period from 2008 to 2012. And
8 we're now in the current phase which runs
9 through 2020.

10 So to look at each phase in a
11 little more detail only because each one had
12 issues that offered some important lessons
13 learned and informed future reforms, in Phase
14 1 which was the pilot phase, so the allocation
15 system, the cap was set by what are called
16 national allocation plans. So each country
17 would determine, based on historical emissions
18 or their best assumptions at the time because
19 during the start of this pilot phase there
20 really didn't have the actual accurate
21 emissions data. So they made their best
22 guesses on what their missions and business as

1 usual trajectory would be and came up with a
2 cap that was then submitted to the European
3 Commission that would either accept or revise
4 it and that would establish the sort of total
5 cap for the program.

6 Nearly all allowances were given
7 free of charge during this phase. Up to five
8 percent could be optioned. Almost no
9 countries actually did any auctioning. I
10 think only one, which was Denmark, did the
11 full five percent auction. And as you can see
12 when the prices were relatively high, sort of
13 free allocation did create some handy profits
14 for companies that received them free of
15 charge.

16 The noncompliance penalties is set
17 at 40 euros per tonne and really the main
18 issue here as I mentioned at first it was the
19 lack of concrete reliable emissions data at
20 the start of this that led to as accurate
21 emissions data started to come in, there was
22 clearly an over allocation in the program that

1 led to the price crashing.

2 And really that first crash, the
3 first round of accurate emissions data came in
4 April of 2006 and that's when you see that
5 first drop. Eventually, the price dropped
6 fully to zero euros and a large part of that
7 was also because there was no bankability of
8 permits between Phase 1 and the next phase.
9 So if you didn't use it by the end of 2008 it
10 was worthless.

11 So all that led to some reforms
12 for the next phase which was the Kyoto
13 Protocol phase of this. And the EU's overall
14 target or commitment under Kyoto was to reduce
15 economy-wide emissions by 8 percent from 1990
16 levels. Now obviously, the ETS is a portion
17 of economy-wide emissions and so the target
18 was that 3.3 percent of that 8 percent would
19 come from this program.

20 They still use the national
21 allocations plans to set the overall target so
22 each country can determine its own cap,

1 essentially. The auction, the allowance for
2 auctions rose from 5 percent to 10 percent,
3 but again for sort of obvious concerns about
4 costs and competitiveness, most countries
5 chose to distribute free of charge.

6 An important addition in the
7 section phase was the introduction of the
8 Kyoto protocol carbon credits into this market
9 so credits created from offset projects
10 through the U.N.'s Clean Development Mechanism
11 and Joint Limitation Program could be used to
12 meet compliance obligations for entities under
13 the EU ETS. And then they bumped up the
14 noncompliance penalty to more than doubled it
15 to 100 euros per ton.

16 As you can see, it started off at
17 a relatively robust place. They also
18 addressed the over allocation by cutting the
19 overall supply targets by 6.5 percent from the
20 2005 level of emissions. But really in 2008,
21 obviously, the euro's own crisis happened.
22 Economic activity fell, emissions fell, and

1 that resulted in the price falling quite a bit
2 in that 2008. And you've sort of seen it kind
3 of consistently decline over the period. The
4 reason that you didn't have to go fully to
5 zero like you did in the first phase was that
6 they didn't introduce bankability in this
7 phase from Phase 2 into Phase 3.

8 So that leads to the current phase
9 of the program which runs through 2020 and
10 really the most significant changes were made
11 between Phase 2 and Phase 3 and a lot of this
12 was established in the directive from 2008.
13 It's important to keep in mind the context
14 that this phase was established. It was the
15 end of 2008. It was the lead up to the big
16 Copenhagen summit. Really the expectations
17 around global climate change policy were quite
18 strong and the expectations that the U.S.
19 would implement a climate policy were also
20 very strong in Europe. It was sort of an
21 assumption that there would be a similar cap
22 and trade program in Europe.

1 So the ambition here was sort of
2 informed by those expectations. So there's
3 clearly a longer compliance time frame that's
4 in line with the Copenhagen targets that the
5 EU had established and there's a linear kind
6 of reduction of the cap to eventually get to
7 that 20 percent reduction by 2020.

8 An important change was rather
9 than do the national allocation plans they
10 moved to a centralized EU cap that would then
11 inform what the allocation is for each member
12 state and the sort of -- they also implemented
13 more harmonized rules for things like
14 allocation for auctioning.

15 Another important move here was
16 again in line with the desire to be more -- to
17 kind of go further on ambition is to move away
18 from free allocations towards auctioning.
19 There was some pushback of the controversial
20 move and there was pushback in particular from
21 Eastern European member states which are
22 further behind in economic development and

1 also tend to be a little more coal dependent
2 where the economic costs for full auction
3 would be more significant.

4 So the compromise agreement was
5 that the power sector would move to 100
6 percent auction in 2013 with the exception of
7 Eastern European member states that would have
8 a more gradual phasing in so they would be
9 allowed to give 70 percent of free allocation
10 to their power sector in 2013. That would
11 phase down to 20 percent by 2020.

12 For the industrial sector, because
13 of concerns about costs and the fact that the
14 industrial sector is more exposed to
15 international competition, there's a greater
16 sort of phase in or longer phase in of
17 auctioning, so 80 percent would be freely
18 allocated in 2013. That would phase down to
19 30 percent by 2020, eventually to zero by 2027
20 was the idea.

21 And the other sort of change here
22 was that the international offsets, you could

1 use it to only meet 50 percent of the
2 obligation under this program, so it was
3 reduced and the other 50 percent would have to
4 come from mitigations within the program
5 itself. But again here, you still have the
6 economic crisis, so you don't have any sort of
7 meaningful recovery in price which is now
8 prompting calls for more structural reforms to
9 the program going forward.

10 So looking at some of the
11 challenges that this program has faced, I mean
12 one of the issues is that that this is a
13 commodity although all commodities are exposed
14 to price fluctuations. This is a commodity
15 that's created by an active legislative decree
16 and therefore it's more vulnerable to
17 fluctuations as a result of kinks in the
18 program, but also more susceptible to
19 government intervention. We've already seen
20 three phases of the program that have had
21 different modifications that changed the price
22 outlook which can challenge predictability and

1 compliance.

2 Another issue is carbon leakage.
3 I mentioned before that for industrial
4 facilities that are exposed to international
5 competition, there is a concern that because
6 of the higher compliance cost in Europe that
7 they would move or relocate abroad. So there
8 are two simplified ways to deal with this.
9 One is to do what the EU did which is to
10 provide free allocations and kind of offset
11 the compliance costs by providing permits for
12 free. The other is to impose some kind of
13 border tariff which is also what's considered,
14 but because of international trade challenges
15 that was not decided to be used.

16 The full impact of this is yet to
17 be felt really because you're still in a
18 period where you have relatively high levels
19 of free allocation, but as you move towards
20 full auctioning this could become a bigger
21 problem, especially as the EU more generally
22 grapples with this issue of competitiveness to

1 recover their economy.

2 The other related issue is energy
3 costs which have been, as you can see here, I
4 mean this is only three data points, but you
5 see sort of an uptick even amid a low economic
6 growth period of electricity prices across the
7 block. But perhaps more tellingly if you look
8 at individuals, some of the larger economies
9 in Europe and compare them to power prices in
10 the U.S., you see that this is where the issue
11 of competitiveness for European companies is
12 coming from.

13 Now obviously, a lot of this has
14 outside contributing factors, outside of the
15 ETS, especially given that carbon prices are
16 relatively low, but it still forms part of the
17 debate and is a contributing factor here.

18 And then another issue has been
19 the implications for the fuel mix in Europe.
20 So clearly the low carbon price, the sort of
21 intent of the program to begin with is to
22 disadvantage more polluting forms of

1 generation including coal, but the low carbon
2 price has meant that especially given in
3 Europe that natural gas prices are relatively
4 high, that that coal has still been in the
5 game and it's sort of a near term relatively
6 attractive market for coal fire generation.

7 Longer term, the original
8 intention was to move away from fossil fuel
9 generation entirely and to incentivize
10 investments in cleaner forms of power,
11 especially renewables, but the price point to
12 do that would have to be significantly higher
13 than where it is today. So even the kind of
14 modifications they're talking about wouldn't
15 get you there in the near term.

16 Some other challenges are
17 politically although Europe is unique in that
18 you do that -- generally have cross-party
19 support for climate policy so the risk of
20 repeal of the program is relatively low, but
21 within the program you have a number of
22 diverse member states who have different

1 opinions about how stringent the program
2 should be. Poland, in particular, has been an
3 outlier in pushing for weaker standards. And
4 when you do structural reforms it does require
5 unanimous support across countries and that
6 can be challenging as you sort of look to
7 build each phase of the program in the future.

8 There also is a drive among some
9 member states to implement separate policies
10 so the U.K. has a carbon price floor, so it's
11 potentially a carbon tax. And France is also
12 considering a carbon tax. How those programs
13 work within the broader program is something
14 that can create some challenges for companies
15 that have to comply with both.

16 The other challenge for Europe has
17 been that -- the hope has been a lot of other
18 countries would move toward emissions trading
19 and that you could create international
20 linkages across programs that would lower
21 compliance costs. That has not happened.
22 Australia has been the only country that has

1 planned to link with the EU ETS and now
2 Australia has a new government that is moving
3 away from its carbon policy, so it's likely
4 that that linkage won't come through. So
5 that's been a challenge for Europe as well and
6 probably will come up in debates as they look
7 to longer-term targets and additional phases
8 of the program.

9 I mentioned the Eurozone crisis
10 has created some issues about the price,
11 falling emissions, as a result of that that
12 sort of not creating the right incentives that
13 they had envisioned for lower carbon sources.
14 The other sort of debate going on is it's
15 unclear how much of emissions reductions has
16 come from the program itself, rather than
17 other factors like economic growth falling
18 off. And that's something, it's hard to know
19 what the counterfactual would be, what would
20 emissions have been without the ETS. But
21 there's a debate about how much of a
22 motivating factor this has really been.

1 And then finally there have also
2 been some incidents of fraud within the system
3 and the trading aspect of it. There was -- in
4 2010 a big scandal around VAT fraud. There's
5 also been issues related to phishing scams or
6 identity theft and registries and carbon
7 permits being stolen from registries that have
8 resulted in halting of the program for a few
9 days in some cases. So those issues have come
10 up, probably a natural sort of evolution of
11 establishing the process, but it is something
12 that the EU has moved to address. So they
13 have sort of tightened up some of the
14 requirements and oversights.

15 So if you see emissions in Europe,
16 part of the sort of benefit for Europe for
17 setting a 1990 baseline was that you naturally
18 already have a significant drop in emissions
19 through the 1990s, but really the second drop
20 coincides with the euro zone crisis and the
21 economic downturn as a result of that.

22 So looking forward, where we are

1 now is that the EU is considering both short-
2 term and long-term reforms to the program.
3 The short-term fix is really as a result of
4 concerns that the carbon price is too low to
5 sort of put in place the incentives that had
6 originally been intended to do. So they're
7 implementing or they're trying to implement a
8 so-called backloading measure. It's where
9 they withhold allowances in the near term and
10 sell them in future years to prop up the near-
11 term price. An initial vote on this failed in
12 April, but they made some revisions to water
13 it down a little bit, so the current proposal
14 is to delay optioning of 900 million
15 allowances through 2015 and then reintroduce
16 them a year later. It passed European
17 parliament in early July. The next step is to
18 go to the European Council.

19 There are still a number of
20 countries that are undecided on this. Germany
21 was the key wild card. But now that Germany,
22 following the election last month, it looks

1 like the Free Democratic Party within Germany
2 had been very opposed to this and they did
3 quite poorly in the election, so now it looks
4 like most likely that Chancellor Merkel and
5 her Christian Democratic Party will form a
6 coalition with the Social Democrats which
7 should provide a consensus around supporting
8 this backloading measure. But again that's a
9 very near-term fix and it's not that
10 significant in terms of propping up the price
11 to the sort of 2030 euro, dollars per ton.
12 The expectation in the market are that it
13 could be sort of 7 or 8 euros, but not more
14 than that.

15 So that sets up the stage for
16 debate around more structural reforms and
17 longer-term targets. There has been some
18 debate about changing the CAF within the
19 current phase of the program to tighten it
20 which would also send up prices. That's
21 highly unlikely and you don't hear as much
22 debate about that any more.

1 So the focus is on targets for the
2 next phase of the program which would run
3 through 2030. There have been public
4 comments. It was open for public comments
5 which closed in June and the target is to
6 establish the 2030 targets by the end of next
7 year, although there is room for delay that
8 that gets pushed off into 2015. In 2015, you
9 could see more motivation and sort of a
10 renewed energy around this as you head up to
11 the 2015 U.N. Summit in Paris, so that could
12 be a motivating factor to boost ambition. But
13 you are in a different period right now where
14 because of the euro zone crisis, there is a
15 real debate in Europe about competitiveness
16 and the role that higher energy prices are
17 playing in the kind of economic downturn and
18 future loss of competitiveness in Europe. So
19 it's going to be more challenging, I think,
20 this round than it was back in 2008.

21 So just to conclude quickly with a
22 few lessons learned. A lot of this is things

1 that I've already mentioned, but basically a
2 commodity that's created by an active
3 government decree will be susceptible to
4 volatility around kinks in the program itself,
5 but also to reform the modification that
6 governments can implement around the way which
7 can challenge predictability for compliance
8 entities.

9 Shorter compliance phases that
10 constantly have to be reformed are again
11 challenge predictability. You had longer-term
12 targets, 2030, 2050, that would provide more
13 clarity for investments. Accurate emissions
14 data were a huge problem in the early parts of
15 this program so the key to providing a robust
16 market, and strong oversight is also important
17 to prevent fraud which did lead to sort of a
18 setback in terms of trust in the program and
19 its viability.

20 The free allocation, although
21 important and essential for mitigating
22 compliance costs did create this debate around

1 windfall profits for companies that some saw
2 as unfair. And the other issue is that in
3 many ways, the cap and trade program did
4 exactly what it was supposed to do which is
5 when the economy is weak, prices are low,
6 prices fall which provides some relief for
7 companies complying. But at the same time, it
8 failed to incentivize the investments in
9 emissions and cleaning technologies that the
10 original intent of this program was for.

11 Another issue that came up is that
12 some companies are better placed to manage to
13 volatility around trading than others and
14 particularly utilities which have existing
15 trading desks when back in the first phase of
16 the program when the sort of initial emissions
17 data came out were much more sophisticated in
18 sort of managing their compliance, whereas
19 industrial facilities that were sort of just
20 holding purely for compliance purposes were
21 less able to kind of game the market.

22 And then finally, there is a

1 debate around offsets and how much they result
2 in actual emissions reductions and therefore
3 how much a company should be required to
4 mitigate on its own rather than purchase
5 offsets to meet its obligations. So I'll stop
6 there, but happy to open up the discussion.

7 MS. GELLICI: Thank you, Divya.
8 Any questions? I'll still trying to get my
9 head around how you actually steal a credit.

10 (Laughter.)

11 Very complicated. Fred? David,
12 Fred had the question.

13 MR. PALMER: Fred Palmer, Peabody
14 Energy. That was very comprehensive and
15 excellent recitation of nothing but negatives.

16 (Laughter.)

17 I have a very basic question. Has
18 anybody asked themselves how people are better
19 or worse off in the EU because of these high
20 electricity prices in the name of carbon
21 emissions?

22 MS. REDDY: I mean I think yes,

1 there is a debate about whether the benefits
2 of carbon reduction, especially given that the
3 EU has put itself out on its own on this issue
4 justify the fact that they are losing
5 competitiveness.

6 MR. PALMER: I'm talking about
7 people.

8 MS. REDDY: Yes, that, too. Yes.
9 It has come up, but I will say that public
10 support for climate mitigation and the carbon
11 policy is generally strong and I would say
12 majority supported. So I think the consensus
13 when you look at public surveys is that people
14 support even if it comes at a cost.

15 That's a change, especially now
16 that you're in the middle of a recession and
17 trying to struggle to come out of it that that
18 public opinion could change, but the sort of
19 opinion has generally centered around there.

20 MR. PALMER: Just a follow on,
21 last winter in the U.K., they were out of
22 natural gas. They had to buy emergency LNG

1 from Qatar, two boats, very large quantities
2 of it. People were literally at risk from
3 freezing to death because of their inability
4 to provide affordable electricity and natural
5 gas. Has that entered into these discussions
6 at all?

7 MS. REDDY: I would say yes, it
8 has entered into the discussions, but not in
9 any concrete way. So there's also concern in
10 places like Germany where you're putting in
11 place a carbon price, but you're moving away
12 from nuclear, so you're really not leaving a
13 lot of options open for yourself, especially
14 if you move to a more robust carbon price. So
15 there is a debate about reliability and the
16 sort of electricity reliability under this
17 program, but not to the point where people are
18 considering moving away from the program.
19 It's not at that level yet. It's just sort of
20 reforms in it to balance out.

21 MS. GELLICI: Any other questions
22 for Divya?

1 Thank you. You handled a very
2 complex topic very well. Thank you.

3 (Applause.)

4 Is Peter here? Our next speaker
5 is walking in as we speak, right on time. As
6 he gets his presentation loaded up, I will
7 take this opportunity to go ahead and
8 introduce Peter Davidson who is the Executive
9 Director of the Loan Program Office at the
10 U.S. Department of Energy. Peter leads the
11 Department's multi-billion dollar Federal Loan
12 Program for both traditional and alternative
13 energy, financing a wide range of fossil,
14 nuclear, solar, wind, geothermal efficiency
15 and biomass energy projects, so quite a load
16 there.

17 Prior to launching the Loan
18 Program Office, Peter was Senior Advisor for
19 Energy and Economic Development at the Port
20 Authority of New York and New Jersey. He
21 served as Executive Director of New York
22 State's economic development agency and then

1 prior to his government service he was an
2 entrepreneur who founded and managed six
3 companies in the newspaper, broadcasting, out
4 of home advertising, and market research
5 business, so quite a breadth and variety of
6 experience there, Peter. He is a graduate of
7 Stanford University and Harvard University's
8 Graduate School of Business Administration.
9 He's going to be talking to us today about the
10 Advanced Fossil Energy Loan Program.

11 Peter, welcome. Thank you for
12 joining us.

13 (Applause.)

14 MR. DAVIDSON: Let me see, is it
15 afternoon or morning?

16 MS. GELLICI: Still morning.

17 MR. DAVIDSON: Good morning. Nice
18 to be here. Great to be here. So the
19 relatively new Executive Director of the Loan
20 Program Office of the Department of Energy,
21 I'm just coming up to my sixth-month
22 anniversary. So I want to spend a little bit

1 of time talking about, in general, the LPO and
2 what we've been doing, but in particular what
3 we're very excited about which is our new
4 advanced fossil solicitation.

5 By way of background, Energy Act
6 of 2005 we were set up for \$35 billion of loan
7 authority across a number of different
8 industries, nuclear industry, renewable
9 industry, and advanced fossil. As some of you
10 know, we went out with a fossil solicitation
11 in 2008, I believe. That was for a coal
12 gassification system. We received a number of
13 applications. Unfortunately, most of those
14 applications the sponsors withdrew the
15 applications because of the time of
16 application price of gas was \$12, \$13 and by
17 the time it went through it, they were
18 gassification projects for power supply, and
19 by the time things came to fruition, the price
20 of gas coming down made a number of sponsors
21 withdraw their applications.

22 A couple of applications are still

1 live, those having to do with coal to liquids
2 and coal to chemicals. Those are still under
3 consideration. If those projects move forward
4 to closing, they will be a deduct from the \$8
5 billion new solicitation which we're going out
6 with now.

7 So let me tell you a little bit
8 about that. Am I controlling the clicker
9 here? Okay. So overview. \$8 billion new
10 solicitation loan guarantee. We can either do
11 direct loans from the Federal Financing Bank
12 of the U.S. Treasury or a loan guarantee,
13 either one. And we are providing this for
14 fossil, the broad scope of fossil energy which
15 we'll get into in a minute.

16 The terms of our financing are
17 really the -- if there's an offtake agreement,
18 we match the length of the offtake agreement
19 or if it's not, it's the useful life of the
20 asset. We have done a great deal of loans
21 already. We have a \$24 billion portfolio of
22 energy deals. And our tenure there goes 10

1 years out to 30 years. So we are a long-term
2 lender with very attractive rates.

3 So what is an advanced fossil
4 energy project that will qualify? We have a
5 number of requirements. First of all, it's a
6 loan, right? Which you guys in this room
7 understand, but many people approaching us do
8 not understand. We are not a granting program.
9 That's Department of Fossil Energy. It's
10 other parts of the Federal Government. We are
11 a loan-only entity. And we were set up by
12 Congress to do a number of things. We are
13 really the -- we are there to accelerate the
14 commercialization of new technologies and new
15 forms of clean energy. So we focus on the
16 innovative part. When there's a new
17 innovative technology, a new innovative
18 process and that process or project is part of
19 a fully baked project where you have your
20 equity in place, you have the offtakes in
21 place, if it's that type of facility, where
22 all the permits are in place, where everything

1 works as a project finance project, but
2 because it's a new technology, because it's an
3 innovative technology, historically banks and
4 lenders have not been willing to finance the
5 first, second, or third deployment of a new
6 technology until it's been proven in the
7 field.

8 So our program is created just to
9 fill that gap.

10 So we will go in and provide the
11 lending for the first, second, or third
12 project of a kind, new technology or new
13 process to demonstrate that the technology
14 works, the new process works, in order to give
15 confidence to other lenders so they come in
16 behind us. And that's -- we've demonstrated
17 that that's how we work in the renewables
18 which has been the majority of the loans we've
19 provided.

20 So there's no question of us
21 crowding out private sources of capital. We
22 are truly a public-private partnership. We

1 will not lend to a deal unless at least 30
2 percent of the project cost is covered by
3 sponsor's equity. That has to be fully in
4 place by the time you come to us and then we
5 will provide up to 70 percent debt that if it
6 works it's based upon the credit of the
7 project sponsor.

8 So it is really focused on
9 innovation and the commercialization of
10 innovation and the demonstration at utility
11 scale of innovation. Part of that has been
12 clean tech as we are very focused on reducing
13 greenhouse gas emissions and the project must
14 be located in the United States. The sponsors
15 can be foreign companies. The supply chain
16 can be foreign companies who do not have any
17 of minimum content requirements, just the
18 project needs to be in the United States.

19 Now very importantly, our
20 definition of innovation by definition in the
21 Act is any first-time deployment of a
22 technology or a process in the United States

1 is by definition innovative. So someone can
2 be working for years in Europe or in Asia or
3 in Africa, it's the first time deploying the
4 United States, it would qualify for us.

5 Okay, we put the solicitation out,
6 the draft solicitation out for comment. We
7 received a number of very helpful comments.
8 We have incorporated those in. We're fine
9 tuning those now and we plan to be issuing the
10 final solicitation within the next few weeks.
11 We went out with the first one in June and I
12 think some of you in the room may have
13 commented on that.

14 We'll be coming out and that will
15 detail when the applications, but it really
16 will be kicking into high gear early next
17 year. That's when we start hoping to see
18 these Part 1 applications.

19 So just a little bit of background
20 and then I'll come more to specifics of it.
21 This is what we have done so far in our
22 portfolio Loan Program Office. We made our

1 first loan in 2010, so it's a relatively new
2 government agency. At this point, our
3 portfolio is over \$32 billion of loans or loan
4 guarantees, been responsible for 55,000 jobs.
5 It shows you where we are throughout the
6 United States. And the majority of loans
7 we've done so far have been -- it's kind of
8 technical, but it's been the 1705 loan program
9 which was really the Stimulus Act program
10 which had a time frame on it. Our loans had
11 to be fully put out by September of 2011.

12 So in that time, we put out \$16
13 billion of renewable loans for renewable
14 energy, the vast majority of that in the
15 solar industry. Eight billion for a
16 conditional commitment for the first new
17 nuclear plant in the United States which is
18 about halfway constructed now.

19 And then we also run a program for
20 the auto industry, Advanced Technology Vehicle
21 Manufacturing program, which is for OEMs and
22 suppliers, all in the process of boosting fuel

1 efficiency for the American fleet. So we've
2 done electric vehicle loans and also a very
3 significant loan to Ford which really allowed
4 them to retrofit a majority of their factories
5 for the SEAM Act and all the great things that
6 have happened. So now Ford is the number one
7 company in the United States in terms of fuel
8 efficiency across their fleet.

9 So as I mentioned, our mission,
10 we're very focused on it, is to accelerate the
11 U.S. commercial deployment of clean energy and
12 advanced vehicle technology. That's what we
13 do and we do it by identifying the weakness in
14 our capital markets which is the providing of
15 this debt for new innovative clean
16 technologies.

17 We have the 31 projects. Some of
18 you may have heard some news out there in the
19 media about prior certain of our earlier
20 loans. They got a lot of press early on. If
21 you look at the bottom chart, the losses to
22 date of our portfolio are 2.6 percent of \$32

1 billion in loan value. That's a numerical
2 number of under \$1 billion. When Congress
3 established this program, we were established
4 with the loan loss reserves or provision for
5 losses for \$10 billion. So more than 90
6 percent of what Congress established us or
7 authorizes to have in loans that go bad
8 remains. We certainly never intend to use
9 that, but we just hope there's been a lot of
10 missed perception in the media about the track
11 record of this performance. So these are the
12 real numbers, 2.6 percent and obviously our
13 portfolio is all on the innovative side. It's
14 the new side. You would expect a higher
15 default rate, but any of you who are
16 commercial lenders in the room, project
17 finance lenders, you know that that as a
18 number is certainly within industry norms.

19 Okay, so what can we finance in
20 our new fossil solicitation? I've highlighted
21 some of these. It's innovative technology
22 must reduce greenhouse gases, based in the

1 United States, and it's a loan, so we really
2 look at the credit quality of the sponsor.
3 We'll either do deals as project finance
4 deals. That's the majority of what we do, but
5 if there's a back stop with a corporate
6 guarantee, we can certainly look at that.

7 So what are the specific areas we
8 are looking to fund in? Just as a background,
9 the earlier 2008 solicitation was solely coal
10 and really coal gassification. As I mentioned
11 before, when we worked that through our system
12 we did not have enough applications even if
13 the two in the pipeline are fully approved to
14 get us to the \$8 billion.

15 So for this solicitation, we
16 worked very closely with all the departments
17 within DOE and across the government and
18 outreach to industry partners and said okay,
19 how can we make this as broad and useful as
20 possible to the entire industry?

21 And so we kind of believe we can
22 finance all along the fossil fuel spectrum and

1 really the way to think about it is if a
2 project uses a fossil fuel somewhere in the
3 system, there's probably a way we can finance
4 it if it's also innovative and reduces
5 greenhouse gases and you can pay it back. So
6 obviously carbon capture, very important part.
7 It's something Department of Energy is very
8 focused in trying to encourage and help. So
9 if there's a project with carbon capture and
10 storage, something we're very interested in.

11 We're looking at projects,
12 obviously, having to do with EOR is the way it
13 kind of works now. But if a project has EOR
14 component for CCS, certainly something we're
15 interested in. So going back, we will look at
16 things from the extractive part of the
17 industry. If there's a project that has a new
18 way of controlling methane emissions at the
19 well head in fracking, that's certainly
20 something we'd like to look at.

21 We do lifecycle greenhouse gas
22 analysis. So if there is a technology dealing

1 with water recycling or better ways to deal
2 with water in the drilling process, that
3 reduces the lifecycle greenhouse gas of the
4 project, that's something that we could
5 certainly finance. So great application
6 thinking oil and gas.

7 Low carbon power. This is where
8 we're really talking about retrofits to
9 factories, retrofits to plants, retrofits to
10 coal plants. And we're hoping we have some
11 type of applications in that area. We can
12 maybe talk about that when we get to
13 questions. But certainly the -- one of the
14 hopes and the intentions that this can really
15 work for existing gas and coal facilities, if
16 there's a desire to make an investment in new
17 technologies that boost efficiency and by
18 boosting efficiency you're going to be
19 reducing greenhouse gas emissions.

20 So plant retrofits very, very
21 important area and that's really one of the
22 things I'm here to communicate and hope we can

1 get some interest from you in this area and I
2 really want to spend the time having you
3 believe that we're very serious about coal
4 retrofits really being something that we at
5 the Department of Energy are very serious of
6 looking at and really hope to get applications
7 in that area.

8 And then efficiency improvements
9 are things we can do closer to the consumer.
10 Those are things like fuel cells, microgrids,
11 very interested in combined heat and power or
12 waste heat recovery, new technologies, new
13 systems to capture those areas where heat is
14 being wasted and made more valuable, certainly
15 we're seeing that.

16 There's a little bit more of a
17 summary. Privates may utilize any type of
18 fossil fuel, coal, oil, natural gas, shale
19 gas, methane, hydrates. We span the full
20 range from the well head all the way to energy
21 efficiency. Oh, and this is very important,
22 the third point. This is new for us at the

1 Department of Energy. All of our
2 solicitations prior to this were only for
3 corporate borrowers. We have expanded it now
4 where municipalities can apply and nonprofits.
5 We think there's going to be significant
6 interest in the solicitation from people
7 trying to do micro grids, particularly on the
8 East Coast. So we now have the ability to
9 provide that to a network of hospitals if
10 they're interested in doing something. If
11 universities are interested in building out
12 their own islanding facilities. Before, we
13 wouldn't have been able to lend to them. Now
14 they qualify.

15 And here's a little bit on the
16 process. Some of you may have been involved
17 before in our 1705 solicitation. It was a
18 very cumbersome process. When we were just
19 setting up the program, it was actually a
20 hand-driven process by people. We made a
21 major investment in the technology so now all
22 the application is through an online portal,

1 much more efficient. It's been extensively
2 tested pre-deployment, so we've learned our
3 lessons and we think it will work quite well.
4 And what we've also done is we have done a
5 two-part application. We're very mindful of
6 the fact that it is an expensive process to go
7 through a DOE solicitation and we're very
8 mindful that it is time consuming.

9 So we've really focused now on a
10 two-part application. And Part 1 is simple
11 information on the project where we can really
12 answer those three questions. Does it reduce
13 greenhouse gases? Is it an innovative
14 technology? Is it in the United States? And
15 do you seem like a credible entity standing
16 behind it? That is the full Part 1
17 application. The fees for that, I don't see
18 we have it here. We haven't released that
19 information, but that will be a much lower fee
20 for Part 1. And then we'll be able to get
21 back to you quickly and this is a big focus of
22 ours for customer service. Prior

1 applications, it could have taken you months
2 to hear back from us if you're in the queue
3 and viable.

4 Now once you apply through this
5 Part 1, we expect to get back to you
6 relatively shortly and let you know you
7 qualify or don't. If you don't, you've only
8 paid a small amount of fee and then you're out
9 of the process. If you do, then you'll have
10 much more time to submit your second part of
11 the application. And then as you go into
12 phase two, there's a much more significant
13 fee.

14 The total fee for going through
15 Part 1 and 2 will be \$1 million. So that's
16 the total fee of applying. Over and above
17 that, legal fees, market fees, all those
18 things, we have found that our applicants of
19 our existing loan portfolio, now that's
20 roughly a \$30 billion portfolio over 31
21 borrowers. So the average size of our loans
22 are \$1 billion. These are very significant

1 loans. The average fees incurred in procuring
2 \$1 billion loan has been about \$2 million. So
3 that's just a way to bracket your
4 expectations. If it's that size of a loan,
5 it's going to cost you about \$2 million to get
6 through our system. That's excluding the
7 upfront fee. We're also trying to be very
8 clear and transparent in terms of the fee
9 structure that we have in our system as you go
10 through it.

11 Many of you are familiar with the
12 idea of credit subsidy costs. That is the way
13 the government, it's not a DOE issue, it's an
14 OMB issue. This is so exciting credit
15 subsidy. All right, I got the hook. We'll
16 deal with credit subsidy if anybody has
17 questions.

18 So that is the end of the
19 presentation so for further information, I'll
20 certainly be here. I want to introduce
21 Brendan Bell in the back who works in the DOE
22 and his name is here. He is really the

1 contact person for any questions that you may
2 have on this. But we're really very excited
3 to be doing this.

4 We think the coal industry is one
5 we are hoping, one of the main appliers or
6 applicants for loans in this, even some of the
7 chatter about is that the administration,
8 Department of Energy is not serious about
9 coal. I can guarantee you we are very
10 committed to it. The Secretary is very
11 committed to it. And we really look forward
12 with many of you in the room to surface
13 applications and hopefully have this be of
14 value to you.

15 Okay? So I think that is it for
16 now.

17 MS. GELLICI: Thank you. I'm
18 going to ask if there are any questions. I
19 see one over there. Thank you.

20 MR. SCHOENFIELD: Jupiter Oxygen.
21 So do I understand now because I read the
22 original draft and talked to some folks in

1 DOE, but as I understand it, listening to you
2 a project could apply for this with 30 percent
3 equity and if it qualifies the underlying
4 companies are not at risk beyond their 30
5 percent?

6 MR. DAVIDSON: Correct. It's just
7 traditional project financed that way. Now
8 that project has got to meet all its own
9 credits statistics and be a viable entity, but
10 the vast majority of our projects now are all
11 project-financed projects just as you
12 described.

13 MR. PALMER: Peter, thank you very
14 much. That was really informative. What's
15 your lending capacity from here? Are you
16 limited by Congress and what's in the bank?

17 MR. DAVIDSON: We have \$8 billion
18 here. So --

19 MR. PALMER: That is available
20 now.

21 MR. DAVIDSON: That's available
22 right now and we come out, it's \$8 billion.

1 There is no time constraint on it, so if it
2 takes -- you're working on a project, but it's
3 not a sufficient state to apply for two or
4 three years, we'll still be open for business
5 in two or three years. The only thing that's
6 going to be a gate on that is if other people
7 apply first and we're out of our \$8 billion of
8 authorization.

9 MR. PALMER: We may come to see
10 you.

11 MR. DAVIDSON: That's what we're
12 here for. We're open for business.

13 MR. PALMER: A second question
14 that's separate. On the lifecycle greenhouse
15 gas analysis, in what context are you doing
16 that and do you have a protocol in DOE for
17 performing that for any fossil project?

18 MR. DAVIDSON: That is a great
19 question and before we go final with that we
20 are spending the time internally now just to
21 nail that down so we can be very clear. We're
22 basically using the Nettle analysis, lifecycle

1 greenhouse gas analysis as done by our
2 national lab.

3 MR. PALMER: And there is
4 controversy surrounding the lifecycle shale
5 gas for use as a fuel in combined cycle power
6 plants. Will you have a view on that
7 particular issue?

8 MR. DAVIDSON: Well, if your
9 system of analysis is correct any of the
10 inputs are encountered for that when you do
11 the analysis. So that is the system we're
12 trying to have that's very clear and we can
13 have complete transparency on how we do that
14 bidding analysis.

15 MR. PALMER: So for example, super
16 critical pulverized coal would have a
17 lifecycle greenhouse analysis that could be
18 performed and combined cycle natural gas using
19 shale gas would have its own.

20 MR. DAVIDSON: Correct.

21 MR. PALMER: And everybody has
22 their own lifecycle gas, but you have to have

1 the same methodology of inputs.

2 MR. DAVIDSON: Right.

3 MR. PALMER: And there's
4 controversy over that.

5 MR. DAVIDSON: Right.

6 MR. PALMER: But you're developing
7 one internal for DOE is what you're saying.

8 MR. DAVIDSON: And you know Nettle
9 has done a lot of work in this area and that's
10 basically what we're going to be using.

11 MR. PALMER: Okay, thank you.

12 MS. GELLICI: And that question
13 came from Fred Palmer at Peabody Energy.
14 Andy, did you have a final question. Oh, same
15 question. Thank you.

16 Peter, thank you so much. I
17 really appreciate it.

18 MR. DAVIDSON: Thank you.

19 (Applause.)

20 MS. GELLICI: I appreciate your
21 indulgence. I know we're running a few
22 minutes behind, but we did have a few items of

1 business to take care of, Council business to
2 take care of so at this point in the program
3 I'd like to call to the podium Fred Palmer who
4 is chair of our Coal Policy Committee to
5 provide an update on NCC pending study topics.

6 Fred?

7 MR. PALMER: Thank you very much,
8 Janet.

9 We have a form we're all supposed
10 to fill out here on how Janet did today and
11 I'm officially for the record filling mine out
12 right now. So I think this session has been
13 superb. I think the line up of speakers, the
14 organization, there is lunch outside. I'm not
15 going to hold you up, but I just say A+ across
16 the board and a round of applause for our new
17 leader.

18 (Applause.)

19 As chair of the Coal Policy
20 Committee, Janet has been in communication
21 with the Executive Committee, including
22 myself, our chairman, John Eaves, who is doing

1 yeoman work in leading this organization as
2 well. And we do have some very exciting
3 things that we have been talking to DOE about
4 that I know you will like that are totally
5 relevant to today where we can answer
6 questions for people like the State of
7 Kentucky that appears to want to follow the
8 Natural Resources Defense Council on
9 greenhouse gas emission regulation as to what
10 the existing fleet might look like in that
11 environment or what the value of that fleet
12 is, things of that nature. And Janet is
13 working directly with DOE in advancing that.

14 I take at face value what Peter
15 just said. I knew Secretary Moniz in his
16 capacity at MIT when as many of us did when he
17 was running a carbon sequestration agenda
18 there. I know Secretary Moniz is committed to
19 coal under the right circumstances. We might
20 disagree over those circumstances, but there's
21 no question of our need to continue to drive
22 the bus on green coal along with Department of

1 Energy and Secretary Moniz, you have our full
2 support in our advisory capacity to you. So
3 that would conclude my remarks today and would
4 turn it back over to Janet and look forward to
5 continuing to work with all of you as we go
6 forward.

7 (Applause.)

8 MS. GELLICI: Thank you, Fred.

9 Now I'd like to call to the podium Greg
10 Workman who is chair of our Finance Committee
11 and he'll give us a few words.

12 MR. WORKMAN: I'll echo Fred's
13 comments and I won't get in the way of us and
14 lunch, but I'm Greg Workman, chair of the
15 Finance Committee for the National Coal
16 Council. Like other organizations in our
17 industry, the National Coal Council has been
18 struggling financially this year.

19 NCC, the National Coal Council,
20 has a unique challenge in front of us in that
21 our membership is voluntary and we've been
22 faced with many members who are not paying

1 over recent history. So for this year we are
2 anticipating a pretty significant shortfall in
3 funding. We should be able to cover this
4 shortfall with our reserve funds, although we
5 expect at this time we will need to deplete
6 these reserves in order to cover that
7 shortfall.

8 So National Coal Council
9 leadership has been actively working on this
10 and working to shore up the financial
11 situation. There's been a lot of cost-cutting
12 efforts. We're looking at proposals for
13 pursuing grant funding. We've been looking,
14 as we always do, looking hard into membership
15 expansion. So those things, as always are on
16 the table, but for 2014, we will be proposing
17 or we will be raising the membership dues
18 across the board for the National Coal Council
19 and again that's across all membership
20 categories.

21 We've not had a dues increase in
22 about five years now. So again, we're going

1 to ask for all levels to contribute in order
2 to keep this organization thriving and now is
3 a critical time as ever for coal and standing
4 up for a very valuable natural resource in the
5 United States. So anyhow, that concludes my
6 remarks. Any questions?

7 MS. GELLICI: Any questions?

8 MR. WORKMAN: Thank you.

9 (Applause.)

10 MS. GELLICI: And for our last bit
11 of business, I'd like to call to the podium
12 David Surber who is chair of our
13 Communications Committee for the
14 Communications Committee Report.

15 David?

16 MR. SURBER: I plan to speak for
17 about two minutes. The Communications
18 Committee met yesterday at 1 p.m. Both
19 Chairman Eaves and Janet Gellici were present.
20 We followed an agenda which had been
21 distributed about ten days ago. That agenda
22 will be resent electronically so that all

1 members of the Council may see and read what
2 we are planning to do.

3 An important item on the agenda is
4 a one-page plan of work for the Committee in
5 2014 and beyond. To conserve time, suffice it
6 to say that the plan of work is quite
7 ambitious.

8 When these documents are
9 transmitted, we will attach a summary of the
10 discussion which took place yesterday.

11 I would respectfully request that
12 more Council members take an active interest
13 in the work plan especially and the resources
14 that will be needed to implement the plan.
15 The work of educating the various designated
16 publics of the Council will not take place
17 overnight, but over time. Speaking only for
18 myself, I do not believe the time is on our
19 side. So then let us all work by consensus
20 and by following the work plan as it will be
21 settled as soon as we receive constructive
22 suggestions to the documents you will be

1 receiving. Thank you for your attention and
2 for your time and interest.

3 (Applause.)

4 MS. GELLICI: Thank you, David.
5 So I had a number of questions that have come
6 up with regard to the status of our charter
7 and membership for 2014-2015 period of time
8 and I just wanted to reassure you that things
9 are in process so that a new charter has been
10 submitted and I understand it's before the
11 general counsel at this point in time. So
12 things are progressing.

13 We had a little hiccup here in
14 Washington about a month ago. Things kind of
15 shut down so we're a little bit delayed on
16 that, but I wanted to reassure you and thank
17 you for your patience. We will be getting
18 member notices out to you as soon as we can
19 work this through the process at DOE. But we
20 look forward to continuing to do the good work
21 on the Council in between now and then and
22 continuing our operation.

1 A couple of housekeeping items.
2 The presentations that we saw today will be
3 emailed out to you. We'll get you links out
4 to those. I would ask you to recycle your
5 name badges. That's helpful to us and we do
6 have evaluation forms. I would appreciate you
7 taking a few minutes of your time. You can
8 leave them at your desks or hand them to Pam
9 at the back of the room and as you depart for
10 lunch here.

11 A couple of thank yous to offer.
12 I would like to first thank our sponsors, Arch
13 and Peabody, for the reception sponsorship
14 last night; Joy Global, for breakfast this
15 morning; our break sponsor, CSX, Tri-State
16 Generation & Transmission, ENN and PPL. Thank
17 you very much and our lunch sponsor for this
18 afternoon, Worley Parsons.

19 I wanted to thank Jeff Miller who
20 just does a great effort on all of our audio
21 and visual help and really does a quality,
22 fine job. I wanted to thank our Program

1 Development Committee. This is the first time
2 that we've actually used a Program Development
3 Committee to put the program together and I
4 think the quality of the program and the
5 speakers truly reflected the benefits of that.
6 So Sy Ali, thank you very much. Kathy Walker,
7 if Kathy is still here, maybe not. And Debbie
8 Schumacher with Peabody Energy, thank you very
9 much for your help. I wanted to thank Pam, as
10 always, for her wonderful support and back
11 office help, a great asset to us. Thank you
12 very much. And to John Eaves and Jeff Wallace
13 for their support this morning, greatly
14 appreciate it.

15 So would you join me in thanking
16 these fine folks?

17 (Applause.)

18 And then finally, I wanted to
19 thank Bob Wright. I've been on the job now
20 for five and a half months and quite honestly
21 don't know how I would wended my way through
22 a lot of things at DOE without your support.

1 It's been invaluable to me. Thank you, Bob,
2 very much. I appreciate it.

3 (Applause.)

4 So I think that's it. This
5 meeting is duly authorized and publicized and
6 is open to the public. The public can submit
7 comments to the Department of Energy or if any
8 individual wishes to speak they may do so at
9 this meeting. Those who wish to speak may do
10 so at this time. Does any member of the
11 public wish to speak at this time?

12 Is there any other business at
13 this point in time to bring before the
14 Council?

15 All right, one final bit, I'm
16 announcing that we will be hosting our next
17 full Council meeting in the spring of 2014
18 here in Washington, D.C. We will be
19 celebrating our 30th anniversary at that
20 event, so we have some special activities that
21 are in process, so we'd really encourage your
22 attendance. I will let you know as soon as we

1 get a venue and as soon as we get some dates
2 confirmed and with that, if there's no other
3 business to come before the Council, we stand
4 adjourned. Thank you. Lunch is right behind
5 us. Pam will direct you.

6 Thank you again for being here.

7 (Applause.)

8 (Whereupon, at 12:27 p.m., the
9 meeting was concluded.)

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