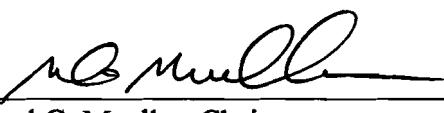


CERTIFICATE OF AUTHENTICITY

I hereby certify that this transcript constitutes an accurate record of the full Council meeting of the National Coal Council held on November 14, 2008 at the Westin Grand Hotel, Washington, D.C.



Michael G. Mueller, Chair
National Coal Council

12/9/08
(Date)

Page 7 - "is hereby called to order
is missing

Page 148 - spelled Mike's name
incorrectly

Mike Mueller comments on the
transcript



C
NATIONAL COAL COUNCIL

+ + + + +

FULL COUNCIL MEETING

+ + + + +

FRIDAY
NOVEMBER 14, 2008

+ + + + +

The Full Council meeting convened at 9:00 a.m. in the Washington Ballroom of the Westin Grand Hotel, 2350 M Street, NW, Washington, DC, Chair Michael G. Mueller presiding.

ATTENDEES:

MIKE MUELLER, Ameren Energy Fuels & Services Company, Chair
RICH EIMER, Dynegy Inc., Vice-Chair
ROBERT BECK, National Coal Council, Executive Vice-President
SY ALI, Clean Energy Consulting
BARB ALTIZER, Eastern Coal Council
TOM ALTMEYER, Arch Coal, Inc
DAVID ANDRE
CAROL BAILEY, RDS, LLC
DICK BAJURA, National Research Center
ERIC BALLES, Babcock Power, Inc.
NEIL BANKSTON
TED BARNA, BarnaSolutions, LLC
MARILYN BECK
JANOS BEER, MIT
RICHARD BERL, Esquire
BOB BESSETTE, CIBO
ROGER BEZDEK, MISI
JACKIE BIRD, WorleyParsons
SIMON BOYCE, Navajo Nation
BILL BROWNELL, Hunton & Williams

C
ORIGINAL

C
ATTENDEES: (CONT.)

ROB BRUBACKER, Porter, Wright, Morris & Arthur
FRANK BURKE, Consultant
MIKE CAREY, Ohio Coal Association
BILL CAYLOR, Kentucky Coal Association
JAMES CHILDRESS, Gasification Research Council (Guest Speaker)
PAUL CICIO, Industrial Energy Consumers of America
FRANK CLEMENTE, Peabody (Guest Speaker)
THE HONORABLE JAMES CONNAUGHTON, Council on Environmental Quality
CHRISTINE CORDNER, Platts
MICHAEL CROTTY, MKT & Associates, LLC
TODD CUNNINGHAM, NRECA
STU DALTON, EPRI
MIKE DELALLO, WorleyParsons
ANITA DIXON
BOB DIXON, CEQ
MIKE DURHAM, ADA Environmental Solutions
JOHN DWYER, Lignite Energy Council
BILL FAY, Fay & Associates
PAUL FELDMAN, Midwest ISO
RIC FENTON, Foundation Coal Corporation
DAVID FINKENBINDER, National Mining Association
JOHN FISCHER, Solid Systems Engineering, LLC
SHANNON FRASER, Department of Commerce
BOB GABBARD, PPL EnergyPlus
JOSIE GASKY, The Annapolis Center
JANET GELLICI, American Coal Council
JOHN GRASSER, Department of Energy
LARRY GRIMES, NCC General Counsel
MANOJ GUHA, Consultant
MARTY HALL, Office of James Connaughton
RICHARD HALL, Richard Hall, PC
CLARK HARRISON, CQ, Inc.
BILL HOBACK, Illinois DCEO Office of Coal Development
JERRY HOLLINDEN, Consultant
JOE HOPF, PSEG Energy Resources, LLC

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

C
ATTENDEES (CONT.)

HOLLY HOPKINS, Department of Interior
DAN JACK, Reschini Agency, Inc.
CHARLES JONES, FirstEnergy Solution
ROBERT KANE, Department of Energy
TONY KAVANAUGH, American Electric Power
NORMAN KETTENBAUER, The Babcock & Wilcox
Company
JOHN KINSMAN, Edison Electric Institute
KLAUS LAMBECK, PUCO
TOM LINEBARGER, Cummins Power Generation
JOHN LONG, Constellation Energy
SARAH MAGRUDER-LYLE, American Petroleum
Institute
MIKE MCCALL, Luminant
MARK MENEZES, Hunton & Williams
JEFF MILLER, Luxottica Retail
KEN NEMETH, Southern States Energy Board
JOHN NORRIS, Fuel Tech, Inc.
JOHN NOVAK, EPRI
MARY EILEEN O'KEEFE, Evergreen Energy
BRENT ORRELL, Department of Labor
JANINE MIDGEN-OSTRANDER, Office of Ohio
Consumers' Counsel
ROLLAND OTTE, Entergy Trading Company
DAN PACKER, Entergy New Orleans
CHRIS PARA, Smith Barney
ALMA PATY, American Coal Foundation
BOB PEARSON, CH2M Hill
MOYA PHELLEPS, National Mining Association
CHRIS POIRIER, CoalTek, Inc.
BOB PURGERT, Energy Industries of Ohio
HAL QUINN, National Mining Association
(Guest Speaker)
CONGRESSMAN NICK RAHALL
FRED REUTER, Conservationist & Science
Educator
MARY NOEL REUTER
CAROLYN SALAPA
JIM SLUTZ, US Department of Energy
CHESTER SMITH, Prairie State Generating
Company, LLC
DAN SMITH, Norfolk Southern Corporation

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

C
ATTENDEES (CONT.)

BILL SPENGEL, URS Corporation
JOE STANKO, Hunton & Williams
SKIP STEPHENS, Joy Global
DAVID STUART, Smith Barney
DAVID SURBER, Make Peace With Nature TV Show
MALCOLM THOMAS, US Coal, Inc.
WALLACE TILLMAN, NRECA
ARVIN TRUJILLO, Navajo Nation
DAVID TURNBULL, North Point Resources, LLC
BARBARA TYRON, EPRI
RAJA UPADHYAY, Pincock, Allen & Holt
BUD WALKER, Midwest Generation
KATHY WALKER, Elm Street Resources, Inc.
JEFF WALLACE, Southern Company
KATHY WALTON, The Basic Industries Group,
LLC
BILL WEISSMAN, Venable, LLP
BOB WHARTON, South Dakota School of Mines &
Technology
ADRIENNE WINES, Richard Hall, PC
JIM WOOD, Babcock Power, Inc.
JON WOOD, Foundation Coal
GREG WORKMAN, Dominion Resources
DAVID ZIEGNER, Indiana Utility Regulatory
Commission

T-A-B-L-E O-F C-O-N-T-E-N-T-S

Welcome and call to order	6
Adoption of Agenda	9
Remarks by DOE Representative	
Acting Assistant Secretary	
James Slutz	10
Council Business	40
Status report on issue papers . . .	40
Information manual	48
Finance Report	49
Frank Clemente, Overview of the World Energy Markets	53
James Childress, Status of Coal-to- Liquids and Coal-to-Natural Gas Technologies	96
Harold Quinn, Election 2008: The Impact on Coal	129
Adjourn	

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

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

2 (9:00 a.

3 CHAIR MUELLER: Good mornin
4 ladies and gentlemen. My name is Mike Mueller,
5 and I'm the ~~children~~ ^{CHAIRMAN} of the National Coal
6 Council.

7 The regular meeting of the
8 National Coal Council.

9 At our meeting this morning we're
10 fortunate to have a number of very special
11 guests.

12 We are pleased to welcome this
13 morning the Acting Assistant Secretary for
14 Fossil Energy the Honorable James A. Slutz.

15 Also, we have the following
16 speakers on today's agenda:

17 Frank Clemente of Penn State
18 University;

19 Jim Childress, Gasification
20 Research Council;

21 Hal Quinn, National Mining
22 Association.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Along with speaking to the Council
2 today I'm also pleased to recognize Jim Slutz
3 as the Federal Designated Representative.

4 In addition to these speakers, we
5 must also conduct the regular business of the
6 Council. So we have a very full agenda today.

7 This meeting is being held in
8 accordance with the Federal Advisory Committee
9 Act and the regulations that govern that Act.

10 Our meeting is open to the public.
11 I would like to welcome guests from the public
12 who have joined us today. An opportunity will
13 be provided for guests to make comments at the
14 end of the meeting.

15 Full and complete minutes of this
16 meeting are being made as well as a verbatim
17 transcript. Therefore, it is important that
18 you use the microphone when you wish to speak
19 and that you begin by stating your name and
20 affiliation.

21 Council members have been provided
22 a copy of the agenda for today's meeting. I

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 would appreciate having a motion for the
2 adoption of this agenda?

3 *JERRY Hollinden* ~~PARTICIPANT~~: Moved.

4 CHAIR MUELLER: Do we have a
5 second?

6 *DICK BAJURA* ~~PARTICIPANT~~: Second.

7 CHAIR MUELLER: All those in
8 favor?

9 ALL: Aye.

10 CHAIR MUELLER: Opposed?

11 Thank you.

12 The Secretary has appointed new
13 members to the Council. I would like to ask
14 that if any of the new members are here, that
15 they please stand so that we can recognize
16 them.

17 Ted Barna, Barna Solutions.

18 Bill Caylor, Kentucky Coal
19 Association.

20 Michael Crotty, MKT & Associates.

21 Robert Gabbard, PPL Energy Plus.

22 Christopher Poirier, CoalTek, Inc.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 Hopefully, I said that right.

2 MR. POIRIER: Yes.

3 CHAIR MUELLER: Good.

4 William Spengel, URS Corporation.

5 Robert Wharton, South Dakota
6 School of Mines and Technology.

7 David Signer, Indiana Utility
8 Regulatory Commission.

9 Congratulations on your
10 appointments. We're very happy to have you on
11 board.

12 Next I'd like to introduce Jim
13 Slutz. Jim is the Acting Assistant Secretary
14 for Fossil Energy.

15 Mr. Slutz is the executive
16 responsible for leading the Office of Fossil
17 Energy, which includes the coal, oil and
18 natural gas business lines in the Department
19 of Energy. This includes extensive research
20 in areas such as carbon sequestration,
21 redistribution and high efficiency power
22 generation in ultra deep water and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealgross.com

1 unconventional gas production.

2 Jim also oversees the nation's
3 strategic petroleum reserve and serves as the
4 primary policy advisor to the Secretary on
5 fossil energy issues.

6 Please join me in welcoming the
7 Honorable Jim Slutz.

8 ACTING ASSIST. SECRETARY SLUTZ:
9 Thank you, Mike. I'm grateful for the
10 opportunity to be here and it's just I'm very
11 pleased to join you this morning.

12 I think everybody, not just in
13 this room but around the world is aware that
14 we had an election a couple of weeks ago. So
15 this will be the last time that I have the
16 opportunity, at least in my present capacity,
17 to join you. But let me just say that one of
18 the things about this job that I will miss
19 with this group and others is the
20 extraordinary opportunity that I have and have
21 had to talk with a broad cross section of
22 energy industry leaders such as you. So that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 is an extraordinary part of these jobs.

2 And with the changes there will be
3 different views. And many policy changes
4 effecting many areas of American life as
5 always happens when a new Administration takes
6 over. But the reality doesn't change, and
7 facts don't change. And in the coal and power
8 generation sector we believe we have faced
9 facts squarely and fashioned a clean coal
10 policy and program that is aligned with
11 reality and provides a foundation for the
12 future.

13 I'm confident that the new
14 Administration will find a clean coal program
15 that is well thought out, forward looking and
16 on the brink of big things, particularly in
17 the area of carbon capture and storage
18 technology. And this will allow the coal to
19 continue to add to the foundation fuel for
20 power generation in the United States.

21 As you all know, we very much rely
22 on coal to meet our vast energy needs. I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 don't think anything that our country uses 1.1
2 billion tons of in a given year is going to go
3 away anytime soon.

Over the past five years the Council has submitted a series of insightful reports to the Secretary of Energy outlining out the United States can use coal to solve some of our most pressing energy needs. The Secretary and the Department appreciate the thoughtful insights that you have provided and on behalf of the Secretary, I want to thank you for your recommendations in this latest report.

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com

1 both our domestic and global energy needs, the
2 burning this tremendous resource for
3 electricity generation results in the release
4 of emissions, including carbon dioxide which
5 contributes to climate change. Of course, the
6 answer to this dilemma is technology, on
7 having the right technologies at the right
8 time which means aligning the technology
9 development and policy implementation
10 timelines. It's not an easy task.

11 And this morning what I'd like to
12 do is, first, connect the international events
13 with recent developments in the United States
14 that may be of interest to you. Second,
15 update you on specific developments in
16 advanced coal research, development and
17 demonstration in the United States especially
18 in the critical area of Co₂ capture and
19 storage. And finally, offer ideas on three
20 parallel tracks that must be developed
21 simultaneously and globally if we are to
22 succeed. And by the way, this is a change we

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 are capable of meeting.

2 Let's begin with a brief overview
3 of U.S. events that relate to international
4 developments. In April 2007 the President
5 committed America to a new goal: To stop the
6 growth of Co₂ an Co₂ equivalent greenhouse
7 gasses by 2025 and, thereafter to reduce it.
8 He explained the decision this way in a speech
9 in the Rose Garden. "We have slowed the
10 growth in emissions. Now is the time for the
11 U.S. to look beyond 2012 and take the next
12 step." His reference was to a commitment made
13 in 2002 to reduce carbon intensity in the
14 United States economy by 18 percent by 2012.
15 All statistics show we are on track to achieve
16 at least this. In fact, United Nations' data
17 show that the U.S. has reduced net greenhouse
18 emissions by three percent since 2000, the
19 second best among 17 major economies. And
20 this was done using voluntary programs.

21 Only five nations and one grouping
22 of nations were able to reduce emissions at

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 all. France, the U.S., the United Kingdom,
2 the EU 15 and Japan.

The President's National Council
on Environmental Quality has further
determined that recent steps taken by the
federal and state governments will avoid six
to ten gigatons of Co₂ and Co₂ equivalent
gasses through 2030. Such steps include:
Higher milage standards for motor vehicles; a
requirement to development and use renewable
fuels, and; a renewal energy portfolio
standards imposed by state governments and
power generation.

14 We believe this to be the world's
15 largest documentable increment of mitigation
16 to date.

17 The next step referred to by the
18 President to stop the growth in emissions
19 foresees a peaking of power plant emissions in
20 10 to 15 years that we've brought about by
21 accelerated development and deployment of
22 advanced technologies. Our responsibility in

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 the U.S. Department of Energy's Office of
2 Fossil Energy is to develop this technology.

3 Everyone here knows that there are
4 only two ways to significantly moderate Co₂
5 emissions in coal-based power generation. The
6 first is to increase efficiency of generation.
7 Reports prepared by the International Energy
8 Agency for the G8 nations include findings on
9 higher efficiencies such as these:

10 Maximizing efficiency is a major
11 pathway to reducing Co₂;

12 Rapid and wide scale reductions
13 are available through efficiency increases and
14 plant upgrades;

15 Integrated gasification combined
16 generation, IGCC, and advanced steam cycle
17 such as ultra-supercritical generation will
18 play an important role in increasing
19 efficiency worldwide.

20 At least 1.7 gigatons of Co₂
21 emissions a year could be avoided through
22 steps to raise worldwide efficiency. A larger

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 reduction than that sought by the Kyoto
2 protocol.

3 And the higher efficiencies of
4 IGCC and ultra-supercritical generation will
5 be necessary to enable widespread carbon
6 dioxide capture and storage.

7 IEA recommended steps for
8 increased efficiency include:

9 Retirement and replacement of the
10 least efficient plants;

11 Upgrade of mid-ranked plants;

12 Precombustion coal preparation;

13 Improving plant performance, and;

14 Requiring that all new plants be
15 state-of-the-art.

16 In addition, as you are aware, a
17 previous National Coal Council study estimated
18 that efficiency upgrades and retrofits to
19 existing coal-based plants could avoid about
20 200 million tons of Co₂. Efficiency increases
21 are prominent in the Hokkaido Declarations of
22 the G8 nation, a major economy meeting which

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 set forth the areas in which parties reached
2 agreement. They were singled out as a low cost
3 way to reduce greenhouse gas emissions and
4 elevate energy security.

5 The other way to mitigate Co₂
6 omissions in coal-based power is carbon
7 dioxide capture and storage, CCS. CCS has
8 come to be seen as indispensable in dealing
9 with the concern about energy and climate.

10 Not long ago the Director of the
11 International Energy Agency said it will be
12 the most important technology in reducing Co₂
13 emissions.

14 Research, development and
15 demonstration of Co₂ capture and storage is
16 the responsibility of the Fossil Energy Office,
17 as you know. Our work is done on a cost shared
18 basis with industry, academia and others in
19 the private sector. We specify objectives in
20 the private sector, including many companies
21 represented here today respond with technology
22 proposals. We have more than 70 active and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

ongoing projects in the carbon sequestration program which include capture, monitoring, mitigation and verification.

We've invested almost 500 million since 1997. We began with one million dollars and our current budget is about \$120 million a year. Investment grew by a factor of almost 50 during the Bush Administration, and has grown by a total of \$429 million to date.

22 || We're looking at improving

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

www.nealrgross.com

1 performance with existing materials and
2 creating more effective new materials.

3 In July, we awarded \$36 million to
4 15 projects that will further the development
5 of cost effective retrofit technologies.

6 And perhaps 145,000 megawatts of
7 U.S. coal-based generating capacity may be
8 suitable for retrofit. That's approximately
9 45 percent of the capacity.

10 On the storage side, large scale
11 and demonstrations of storage will begin next
12 year under the regional carbon sequestration
13 partnerships, which are also part of the
14 carbon sequestration program. The
15 partnerships encompass 42 states of the United
16 States and four Canadian provinces. They span
17 most of North American land mass. There are
18 seven partnerships because partnership
19 boundaries are delineated by pertinent and
20 common geological features. Their membership
21 is compromised of more than 350 unique
22 entities: The power energy producers of a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

given region as well as related enterprises, universities and academics, state geological surveys and public interest groups.

To date the partnerships have identified 3,500 gigatons of potential geological storage in the U.S. and Canada and 3.8 gigatons of CO₂ a year subject to capture at power plants and other stationary sources.

The ratio of emissions to storage capacity is more than 900 years.

11 Each partnership has conducted
12 moldable small scale field validation tests to
13 assess promising reservoirs. Next year they
14 will begin eight large scale injections into
15 their most promising reservoirs in the
16 deployment phase, phase three.

17 One partnership will conduct two
18 tests: One in North Dakota and one in the
19 Canadian Province of British Columbia. There
20 will be seven tests involving deep saline at
21 reservoirs and one of storage linked with
22 enhanced oil recovery. Two injections are

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 currently scheduled to begin in 2009, four in
2 2010 and two in 2011. They will range from
3 250,000 tons per year to 1 million tons of Co₂
4 per year.

5 In total, 16 million metric tons
6 will be injected and monitored during the
7 tests. Co₂ for injection will come from
8 natural deposits, ethanol production, natural
9 gas processing and in two cases eventually
10 from coal-based power generation.

11 Two partnerships have announced
12 plans to use capture technologies in the
13 demonstrations. One will use ammonia-base
14 capture and the other oxygen combustion.

15 Each large scale test of the
16 deployment phase is intended to lay the
17 foundation for future commercial
18 demonstrations by validating a region's
19 principle reservoir. It will also validate
20 that sequestration can be commercially applied
21 in many different geologies.

22 Of equal importance, the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 partnerships also are developing formal
2 procedures and scientific principles necessary
3 to establish a regulatory and statutory basis
4 for the successful practice of safe and
5 permanent long-term storage. Activities will
6 include qualifying projects, permitting,
7 injection, post-injection monitoring and
8 successful closure.

9 I should add that this is an area
10 where DOE is working very closely with the
11 U.S. Environmental Protection Agency. They
12 develop the regulations, but we're developing
13 some of that scientific basis to work so that
14 their regulation can be most effective.

15 We do peer review of our
16 scientific programs. That's a good thing. One
17 of the challenges is, as I mentioned, were 300
18 different entities involved in these and it
19 turns out everybody who is anybody who is the
20 top of their field in sequestration in the
21 United States is involved in one of these
22 program. And the whole idea with peer review

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 is you get independent people involved. So we
2 had to seek out an international panel to come
3 in to do a peer review. And that, actually,
4 ended up being a tremendous benefit to this
5 get very objective outside expertise that
6 wasn't at all familiar with these. And we are
7 also very, very pleased that outside in that
8 peer review process that this independent
9 panel of experts that were assembled by the
10 International Energy Agency we reached out to,
11 and many of which I will say are Nobel
12 laureates, and this was earlier this year, they
13 found that the regional carbon sequestration
14 partnerships constitute the world's most
15 ambitious capture and storage program. The
16 experts found that it will significantly
17 advance the cause of CCS in the U.S., in
18 Canada and internationally.

19 Which means this past summer the
20 G8 nations called for advancing CCS
21 internationally. They called for 20 major
22 demonstrations by 2020. Under our current

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 research program the U.S. will support at
2 least ten of these. Seven come from the
3 regional partnerships, the seven that are in
4 the United States. Others will come from the
5 third round of the President's Clean Coal
6 Power Initiative, CCPI, and from our
7 restructured FutureGen project. Both CCPI and
8 the FutureGen project were reoriented this
9 year toward commercial square capture and
10 storage to pull the technology forward.

11 Found three of CCPI will provide
12 340 million for demonstration of capture
13 technologies capable of 90 percent capture
14 efficiency and of storing or providing for
15 beneficial reuse at least 300,000 tons of Co₂
16 a year.

17 The restructured FutureGen program
18 seeks to foster commercial scale deployment of
19 CCS technology. FutureGen demonstrations will
20 be expected to capture and store up to 1
21 million metric tons of Co₂ a year in deep
22 saline reservoirs.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Capture efficiencies will 90
2 percent.with this program,

3 Following extensive input from
4 industry, the Department issued a funding
5 opportunity announcement in June and received
6 proposals by the early October deadline. We
7 are now in a rigorous review process of those
8 applications and tend to make the final
9 selection of projects by year end.

10 This completes my review of the
11 U.S. activity in research development and
12 demonstration.

13 It's also important to look at the
14 market. In the U.S. Market one project that
15 is -- well, there are many projects of
16 interests but let me just highlight one. Duke
17 Energy began construction this year on its
18 landmark scale-up of IGCC to 530 megawatts.
19 This project will replace 160 megawatts of
20 very old coal-fired power capacity. And I
21 know, I had occasion just this morning to have
22 a little chat on the state of Indiana with

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Commissioner Ziegner. He's here somewhere.
2 He's very excited about that project in
3 Indiana. But that project will produce 45
4 percent less Co₂ per kilowatt hour and deliver
5 ten times more power. And a study is underway
6 on possibly linking it with CCS. So exciting
7 in the commercial development.

8 Other IGCC plants and advanced
9 coal systems are under construction or
10 development around the world. Capture
11 technologies are being tested at pilot scale
12 and ready for scale-up in many nations.
13 Storage and storage technologies are under
14 development and many plans for near zero
15 emissions plants are moving forward.

16 We've opened the door on a new era
17 of energy security and climate security. To
18 move through that door and enjoy the benefits
19 of this era, we quickly have to move these
20 technologies through IEA, report to the G8
21 nations called "The Valley of Death," and then
22 into commercial use.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 In the Valley of Death
2 technologies languish and go unused go to high
3 investment cost due to belief that there are
4 significant risks and due to the lack of
5 either technology push or market pull to move
6 them forward. The through the valley is to
7 proceed simultaneously on parallel paths
8 symbolized by a triangle with legs of equal
9 length and importance: Technology
10 development, policy and markets. Right
11 technologies influence policy and markets.
12 Good policy influences market and
13 technologies, technology development and
14 uptake.

15 Our jobs are to get the technology
16 right. The world has embarked on a drive to
17 complete its electrification. We're moving in
18 common directions. We are accelerating
19 deployment of advanced coal generating
20 technologies. We're accelerating development
21 and deployment of CCS. The next few years will
22 yield enormous amounts of experience in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 design, construction and operations. Lessons
2 learned will abound.

3 Now is the time to think about how
4 to share that kind of information widely and
5 frequently. We need to explore opportunities
6 to expand information sharing and
7 collaboration. We need to maximize our
8 participation, especially from industry in
9 this collaboration if we are to see the
10 potential of carbon capture and storage
11 technology realized.

12 We need to increase industry
13 participation in the Carbon Sequestration
14 Leadership Forum, the International Energy
15 Agency, particularly their Clean Coal Center
16 and greenhouse program and other international
17 bodies.

18 And we need to know from industry
19 how we in government can best participate with
20 the advance of carbon capture and storage.

21 Advancing in carbon capture and
22 storage technology and the collaboration to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 that technology into the marketplace is a
2 foundational step to mitigating climate change
3 and ensuring energy security not just in the
4 United States, but for the world.

5 And this work could not be
6 successful without the direct participation of
7 industry and other interested parties through
8 venues such as the National Coal Council. The
9 time that you take to support this advisory
10 committee, a committee with the purpose of
11 providing advice and recommendation to the
12 Secretary and the Department is greatly
13 appreciated. It is a service to the nation.

14 Thank you for your service. And
15 thank you for your attention.

16 EXECUTIVE VICE PRESIDENT BECK:
17 Good morning, ladies and gentlemen. Bob Beck
18 with the National Coal Council staff.

19 Jim has agreed to take a few
20 questions from the members of the Council. So
21 if you have any, please raise your hand. And
22 I will get the microphone to you.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 For recording purposes, please
2 identify yourself and your affiliation.

3 Questions?

4 Rich, I'm sorry. I can't see
5 behind me.

6 VICE=CHAIR EIMER: Hi. Rich Eimer
7 from Dynegy.

8 I'm just curious, Jim, what you
9 see on the horizon for some sort of federal
10 policy or action around resolving the
11 liability issues associated with
12 sequestration?

13 ACTING ASSIST. SECRETARY SLUTZ:
14 First question is a tough question.

15 I'll tell you, the liability issue
16 on sequestration we all know is one of the key
17 issues. And, I'll tell you, I wish I had an
18 easier clear answer on how that evolved. I
19 don't. But that was one of those issues I
20 think that when I talk about collaboration and
21 it kind of bridges over not just technology
22 but those kind of policy issues. Because I

1 don't think we in government always understand
2 how those liability issues -- I know we don't
3 understand how they effect companies and how,
4 especially the Sarbanes-Oxley, some of those
5 kinds of changes can have dramatic impacts on
6 things like liability, how you do your
7 financial reporting and all those issues. And
8 I know we really don't have a grasp on that.
9 So I think it's one of those areas that is
10 going to be essential to figure out and really
11 I think is going to have to take a lot more
12 effort than has been put into it so far to
13 move that forward.

Now I think on the flip side, moving these demo projects forward they kind of drive some of those issues. Fortunately, in some areas states have kind of stepped up to provide an overlay to get those projects moving forward. And then by that we'll get some examples, real practice to identify the real issues and kind of move that.

22 EXECUTIVE VICE PRESIDENT BECK:

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 Another question? Dick.

2 MR. BAJURA: Dick Bajura, West
3 Virginia University.

4 Hi, Jim.

5 Had some email traffic yesterday
6 with one of our technical societies in our
7 work with the Hill, continual questions about
8 carbon sequestration, will it work. In the
9 work that the carbon partnerships have done I
10 know they've been working with the general
11 public. What kind of a feel do you have for
12 how the public might embrace the proposals
13 that we've presented here on how to declare
14 this technology?

15 ACTING ASSIST. SECRETARY SLUTZ:
16 You know, I don't think there's really a
17 complete generic answer. Because I think if
18 you look, and many of you know I've a lot of--
19 well, first of all, some of you may not know.
20 Let me kind of give you just a little bit of
21 mine.

22 I started my career promoting

1 underground injection wells for the oil and
2 gas industry. So I got involved in a
3 different kind of injection. And I would say
4 there's not one answer to that that's
5 universal across the country.

6 One: I think public outreach is
7 going to be important to explain that. I
8 think from the standpoint we do have as far as
9 will it work, we know from geologic practices
10 in the oil and gas industry because we've been
11 injecting Co₂ for decades as part of enhanced
12 oil recovery and we also have a lot of history
13 with injecting other, like salt water that's
14 a byproduct of production. We have a lot of
15 research on tracking those injected fluids.

16 So I really think we know how to
17 do it. The key is getting more information
18 because of the time periods that we're looking
19 at with Co₂, we want to increase our
20 confidence in the modeling and things like
21 that. So these research projects will develop
22 the empirical data to advance those models. I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 think that will be key. But I think in
2 different areas, different communities, you're
3 going to have different levels of concern.
4 And I think the key is just like any kind of
5 development project, it's going to be very
6 important to plan an engagement, an education
7 with the community on how this is going to
8 work, how you're protecting the community. And
9 then also why is this valuable?

10 Clearly, there is a great
11 sentiment I think throughout the world that
12 climate change is an important thing to
13 address. And at the same time so is providing
14 energy is absolutely critical for sustaining
15 an economy or development an economy.

16 So those kind of issues, I think
17 all that goes into the broader educating
18 people and then working through those regional
19 concerns. I think it's going to be a key
20 issue.

21 EXECUTIVE VICE PRESIDENT BECK:
22 One more. Mike.

1 MR. CROTTY: Mike Crotty from MKT
2 and Associates.

3 Jim, what mechanisms are how are
4 you bringing the Chinese into the
5 collaboration of all of this research and
6 development?

7 ACTING ASSIST. SECRETARY SLUTZ:
8 There are a number of international mechanisms
9 out there that engage the international
10 community. And in particular in Chinese, we
11 engaged through some multilateral programs
12 like the Asia-Pacific Partnership. We actually
13 have a couple of folks in the room that are
14 very active in that. There is Stu Dalton and
15 then Mr. John Hartwell from Australia is in
16 the back and he chairs one of those task
17 forces. But through mechanisms like that that
18 are geared toward advancing that technology.

19 In addition, we work on a
20 bilateral basis with the Chinese. Coming up
21 in a few weeks is the Strategic Economic
22 Dialogue which is led by Treasury, several

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 other agencies are involved. But energy
2 issues and advancing climate technology are
3 key issues in those types of dialogue to
4 advance the technology, the information. And
5 not just technology, but also things like I
6 mentioned the Carbon Sequestration Leadership
7 Forum in my comments. Advancing the policies
8 around things like sequestration and sharing
9 information.

10 There are other countries. I
11 mentioned Mr. Hartwell, like Australia that
12 are moving forward with regulatory structures
13 for CCS. So how can we share those among
14 different governments?

15 But there is specific cooperation
16 with the Chinese but it's broader than that
17 and it's important because climate change
18 requires a global solution.

19 EXECUTIVE VICE PRESIDENT BECK: I
20 didn't know that the *Federal Register* notice
21 of this meeting got all the way to Australia,
22 but I'm glad that Mr. Hartwell came along.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Jim, just from the Council
2 standpoint, thank you for the many years that
3 you all have served over there. We've enjoyed
4 it, and we look forward to continuing the
5 relationship in some manner as we go forward.

6 I know that there's a change of
7 Administration coming, but we do greatly
8 appreciate all the support that you all have
9 given to us.

10 And we thank you for coming this
11 morning. So thank you very much.

12 ACTING ASSIST. SECRETARY SLUTZ:

13 My please ~~VRE~~.

14 EXECUTIVE VICE PRESIDENT BECK:
15 For the media folks, I think Jim will probably
16 step outside and take a couple of questions.

17 CHAIR MUELLER: Okay. I'd like to
18 move on to Council business and a
19 presentation, discussion and action of the new
20 draft papers that the Council has been working
21 on. Jerry Hollinden and Jackie Bird and a
22 number of others have done a lot of very good

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 work on these papers. And with that, I'll turn
2 the podium over to Mr. Jerry Hollinden our
3 study team leader.

4 MR. HOLLINDEN: I have nothing to
5 report.

6 Yes, this is, as was mentioned, my
7 name is Jerry Hollinden. I had the
8 opportunity to chair a reports -- maybe a lot
9 of you don't know what we did, so maybe I'll
10 give you a little background.

11 At the last meeting a number of us
12 discussed it would be pretty nice if we could
13 put together some packages of types of reports
14 that we've done in the past for the new
15 Administration. And I was asked to chair that.
16 And we worked on these reports all summer,
17 took us about four months. We started in June.
18 We met, actually, by telephone. All of our
19 meetings were with conference calls. And we
20 had over 30 people participate. So it was
21 pretty neat to do that during the summer when
22 there was a lot of vacations going on and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 things like that. But we think that these
2 reports are excellent.

3 If you'd go to the next one,
4 please.

5 The objective of these issue
6 papers were:

7 (1) To educate the new
8 Administration and Congress. We thought this
9 would be extremely important on coal. And,
10 you know, what our thoughts were on coal;

11 (2) The intent was to use
12 existing National Coal Council publications.
13 So there was no new information in these
14 reports. That got us around some issues of
15 having the Secretary ask us to do this because
16 there was no new information in these reports;

17 (3) The reports were to be sharp
18 and concise. They're four pages each, and;

19 (4) They were to be written as
20 much as possible for the layperson. This got
21 a little difficult. I mean when you write on
22 advanced coal combustion, you know try to get

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 that into layman terms it was a little
2 difficult. But in most cases I think that we
3 wrote it for Congress and the staffers to
4 understand.

When we convened we didn't know how many papers we were going to have. It turned out we ended up with eight. In the last days here we've actually talked about maybe adding a few more. So just because we've done eight doesn't mean that's all that we'll end up doing.

What you see up here are the eight issue papers. The first one was done by Frank Clemente on The Global Realities of Energy. This is a broad perspective, not just coal but where are we going in the world on energy and what are the concerns, issues.

The third and fourth reports were

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 prepared by one of our speakers coming up,
2 Frank Clemente. One on Liquids From Coal and
3 the other one on Substitute Natural Gas From
4 Goal. Both of those focusing on the theme of
5 energy independence.

6 The fifth report was done by Janos
7 M. Beer on New Coal-Fired Plants. The focus
8 would be on high efficiency new coal-fired
9 plans. And in conjunction with that Vince
10 Albanese did a similar paper on existing coal-
11 fired plants: How Can We Improve the
12 Efficiency of Existing Coal-Fired Power
13 Plants?"

14 The seventh study then focuses
15 basically on what we really wanted to get
16 across, and that was coal. And Frank Burke
17 talked about how coal, how it fits into our
18 nation's future energy security, et cetera.

19 And then the last paper, kind of
20 unique paper on Underground Coal Gasification
21 by Janine Ostrander. There has been a lot of
22 interest in underground coal gasification, a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 lot of questions have been asked over the
2 years. And we thought this made some sense to
3 have this paper in here. It fits a little
4 differently than the other ones, but there's
5 a lot of advantages to making sure that the
6 new Administration understands the advantages
7 to such a technology.

8 The audiences for these reports,
9 besides the normal media, civic groups and all
10 that we normally send these reports, really is
11 to focus on the new Administration. You know,
12 the Executive Branch, the new Secretary of
13 Energy, the Assistant Secretaries and
14 Congress, and particularly their staffers.
15 And, hopefully, that four pages is something
16 that they can digest. Not read some of our
17 real thick reports, but summary reports.

18 So it became key then that the
19 themes that we develop in these reports they
20 kind of go through all the reports. In other
21 words, we wanted them to kind of if you read
22 one, you read another and it looked like they

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 fit together in the types of themes that we're
2 trying to convey. And I think when you read
3 these you'll see that.

4 Number one, coal is abundantly
5 domestic just like oil is in Saudi Arabia and
6 gas is in Russia, you know we got the same
7 thing with coal in the United States.

8 And it's affordable. You don't
9 see these gigantic increases and decreases
10 that we see, mainly increases but we've
11 decreases in liquids lately. But coal is very
12 affordable.

13 It will help us achieve energy
14 security.

15 It's continually increasingly
16 clean.

17 And probably the most important is
18 that carbon capture and storage will make it
19 happen.

20 And those are the themes that run
21 through all these reports.

22 What we're asking the full Council

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 today is to take a look at these eight reports
2 that are in your packet in front of you and
3 we'd like for you to review them and get
4 comments back.

5 There's been significant review
6 already. As I said, there's been 30 or more
7 people involved in these reports, but we still
8 are asking for your advice. So we'd like for
9 you to look at these papers, these eight, and
10 get me comments back. Instead of sending them
11 to the author or to Bob, if you would send
12 them to me via email, then I can coordinate to
13 make sure that the right people get the
14 comments. If we're going to make a change in
15 one, it's got to be reflected in the other
16 ones.

17 And remember: The important thing
18 is is that we're summarizing current reports
19 that we've done. All the data may not be up to
20 date as much as you would like. If we didn't
21 do a report on something, but say two years
22 ago, all we can do is report on that data. We

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 can't report on something that maybe has
2 happened a year ago if that report came out
3 two years ago.

4 So we'd like for you to look at
5 that, make sure that we are summarizing that
6 data accurately.

7 And then finally, if you have any
8 ideas on new reports. You know, maybe we
9 didn't capture; we've got eight in here, maybe
10 you would like to see us do another one or
11 two. What we'd like to do next year, as Bob
12 and I have talked about, is maybe prepare
13 three, four or five more for the new
14 Administration on areas that we think are
15 extremely important.

16 You know, one could be the issue
17 when GAO asked us to look at if we converted
18 all of our coal-fired plants to gas, what
19 effect would that have. That probably would be
20 a very good summary because that probably
21 could come up in the future Administration. We
22 did not address that in these eight reports.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 And there may be other ones that would make
2 sense.

3 So if you could get me these
4 comments back, we're asking you to get them
5 back by December the 5th. You know, we
6 certainly want to have as many of these
7 reports finalized before the new
8 Administration comes in so we can get them in
9 the right people's hands.

10 And I guess if you have had any
11 other questions, I know we got a full agenda,
12 if you would see me after the meeting, we can
13 talk more. Thank you.

14 EXECUTIVE VICE PRESIDENT BECK:
15 Jackie, are you going to mention the
16 information manual?

17 I'm sorry, Mike. I didn't mean to
18 step on your ~~y~~ INTRODUCTION.

19 MS. BIRD: I have the easy part of
20 the job.

21 We also thought what would be
22 useful to the new Administration, new Congress

1 and anybody else who is interested in the
2 National Coal Council including new members
3 might be a users manual. How does NCC work?
4 How does it function? And just *Excel for*
5 *Dummies*, it's a pretty boring read until you
6 need to figure out how to construct that chart
7 and drop it into your report.

8 So, you know, if somebody some
9 night wants to figure out late in night how to
10 get a report going at the NCC, what does the
11 Secretary need to do to initiate something
12 like that, or how do we function, what are our
13 committees, here it is.

14 Again, along with Jerry, I ask
15 that if you have any comments on this or
16 suggestions that you email it to me by
17 December the 5th.

18 And this one was a much smaller
19 committee, which is noted in the beginning of
20 the report. It was basically the NCC staff and
21 me. Because there's no policy, there are no
22 recommendations, nothing like that is in this

1 report. It is simply just the facts on what
2 NCC is and how it functions.

3 Thank you.

4 EXECUTIVE VICE PRESIDENT BECK:
5 Thank you, Jackie.

6 A clear indication that the
7 Council is a purely voluntarily organization
8 because Jackie was the one that proposed it.
9 And since she looked around and saw everybody
10 going the other way, she was elected to work
11 with us to get it done.

12 Thank you.

13 CHAIR MUELLER: Thank you.

14 Next I'd like to introduce our new
15 Finance Committee Chair Mr. Joe Hopf and
16 invite him to come up and give our finance
17 report.

18 MR. HOPF: Thanks, Mr. Chairman.

19 As Mike said, my name is Joe Hopf,
20 and I'm the Chair of the Finance Committee.

21 So I'd like to give you an updated
22 report from the discussions that we had

1 yesterday at the Finance Committee in the
2 Executive Committee.

In relationship to our yearly audit, the Finance Committee and the Executive Committee once again recommended that the Council retain Chaconas & Wilson to conduct the 2009 audit.

I would so move and would look for
a second.

MIKE CROTTY : I SECOND.
All in favor?

11 || ALL: Aye.

12 MR. HOPF: Opposed?

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701
(202) 234-4433 www.nealrgross.com

1 you statements have been sent out for the 2009
2 dues. So I would encourage all of you to pay
3 those in a timely manner.

4 If we can all do our part, the
5 Council will have enough financial stability
6 to continue us into the future and our
7 mission.

8 Yesterday the Finance Committee
9 and the Executive Committee approved the 2009
10 budget for the Council.

11 And now I'd like to make a motion
12 that the full Council accept and approve the
13 budget. And so I move, and would ask for a
14 second.

15 **Sy Ali: SECOND.**
All in favor?

16 ALL: Aye.

17 MR. HOPF: Opposed?

18 Should any of you have questions
19 about the budget for 2008/2009 you can see Bob
20 Beck or myself, and we'd be glad to discuss
21 that with you.

22 Thank you, Mr. Chairman. That

1 concludes my report.

2 CHAIR MUELLER: Okay. Next I'd
3 like to introduce our new Vice-Chair, Mr. Rich
4 Eimer. He is going to introduce the following
5 speakers.

6 VICE-CHAIR EIMER: Introducing the
7 introducee? Okay.

8 It's my pleasure to introduce
9 Professor Frank Clemente, who as you've seen
10 already has not only contributed mightily to
11 our efforts around the new briefing papers
12 that we have, but also as the Senior Professor
13 of Social Science and Energy Policy at Penn
14 State University. He is a senior member of
15 the graduate faculty and former director of
16 the University's Environmental Policy Center.

17 His research specialization is in
18 the socio-economic impact of energy policy,
19 especially on families, minorities, business
20 and communities. He has published over 100
21 articles in many, many publications including
22 publications like *Public Utilities*

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Fortnightly. His social and science
2 publications have also appeared in
3 publications such as *Urban Studies* and the
4 *Journal of Black Studies*, *Farm Economics* and
5 *Rural Sociology*. His research has been funded
6 by the National Science Foundation,
7 Rockefeller Foundation and the Ford
8 Foundation.

9 He holds a Ph.D. in Demography
10 from the University of Tennessee, and was the
11 NIH post-doctoral fellow.

12 Please welcome Professor Frank
13 Clemente.

14 (APPLAUSE.)

15 DR. CLEMENTE: Thank you very
16 much. Before I start, Larry asked me to
17 clarify that all the reports from which these
18 papers were drawn are on the website, and you
19 can check them and so forth. And I want to
20 clarify that I was given credit for writing
21 three papers, but I really only wrote one.
22 The other two I edited. I'm not smart enough

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 to write three papers, and anybody here knows
2 that I'm not. So it was nice of Jerry to give
3 me credit, but I really didn't write them all.

4 I teach a course at Penn State
5 called Social Problems. And so it's in a
6 gigantic auditorium, and I've got everybody in
7 there. It's a community really. I have a
8 waiting list of about 400 kids. So it's hard
9 to get into the class, and by the time people
10 get in there usually graduating seniors.

11 And they want to know what's
12 facing them when they get out into the world.
13 And they come in and they sort of anticipate
14 that I'll talk about drugs and alcoholism and
15 all these things that are social problems.
16 And eventually I do. But they're kind of
17 surprised when I start discussing energy so
18 much. Because I think energy's the big
19 question of their generation, one they're
20 going to have to deal with.

21 How are they going to have the
22 kind of energy that they need to live the life

1 that they want to live? Because believe me,
2 their goals, hopes and ambitions are not
3 different than the goals, hopes and ambitions
4 that you had when you were in college, and
5 that I had.

6 So I spend a lot of time talking
7 about that and try to give them my feelings on
8 where we're going in terms of energy and why
9 the United States really does need to face up
10 to some energy realities around the world
11 because to me it's a global picture rather
12 than a domestic one.

13 I've been talking recently to --
14 let me see if I've got this right -- a number
15 of different groups. And this is some
16 examples of people I've been discussing. So
17 this lecture I've been looking forward to --
18 this presentation -- because it gives me a
19 chance to get some quality control. There's
20 a lot of people in this room that know more
21 about energy than me, and about any specific
22 topic than me.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 So this is the kind of stuff I'm
2 saying out there in the real world to these
3 kinds of people. So if I'm saying something
4 that you say, hey, Frank, that's wrong, or
5 that needs to be expanded, or I don't think
6 so, well, this is a good opportunity to sort
7 of set me -- and sort of a mid-course
8 correction. And don't hesitate to catch me
9 after this meeting or send me an email because
10 I'd rather have you correct me than have some
11 lawyer who's cross examining me kick my ass on
12 the witness stand. And that's happened many
13 times by the way.

14 So it's sort of six premises of
15 where I start in terms of my thinking. And
16 basically what we're seeing is unprecedented
17 at the world level. And of course, we've had
18 some changes in the last few weeks and months.
19 But I think overall the trends pretty clear.
20 We're in an unprecedented situation in terms
21 of the demand for energy.

One of my students said, Professor

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 Clemente, it's like the new industrial
2 revolution. Well, it's really like 18 new
3 industrial revolutions taking place all at the
4 same time. And I believe coal is the primary
5 mechanism or means to meet that demand over a
6 period of time for a variety of reasons. Coal
7 conversion to me is an answer to solving
8 supply problems around the world, and carbon
9 capture and sequestration is the pathway.

10 I believe that the biggest major
11 contribution that the United States can make
12 in terms of reducing global poverty -- which
13 I think should always continue to be on the
14 table -- and make contributions to climate
15 change -- is to promote carbon capture and
16 sequestration and make it available to the
17 rest of the world even if we have to give it
18 away. That to me would be our biggest
19 contribution that we could make. We have 1.6
20 billion people in this world that do not have
21 any access to electricity whatsoever. That's
22 five times the population of the United

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 States. And another 1.5 or 2.5 or 3 --
2 whatever you want to say -- don't have
3 adequate access to electricity.

4 I think that we need to have
5 financial incentives in place to promote CCS.
6 I don't think we're at that stage right now,
7 and we need to expand those incentives
8 significantly over the next ten years.

9 Now the National Coal Council as
10 shown in these papers has already laid out a
11 good conceptual framework in the 2004 report,
12 the identification of what the path should be,
13 and then the 2006 report, we focused mostly on
14 the economic dimensions of it and energy
15 supply, the technological capabilities in the
16 2007 report. And a lot of people in this room
17 were involved in all of those. And by 2008,
18 we started seeing we've got to hurry up. We
19 can't just sit around anymore and just come up
20 with ideas. And so there has to be urgency of
21 what's going on because this is ongoing at the
22 global level.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 Just to give you an idea and
2 remind you of some of the benefits that we
3 came up with, and this comes from working with
4 Tim Considine who worked with me at Penn State
5 and is now Distinguished Professor of Energy
6 Economics at the University of Wyoming -- just
7 assumed that position. And some of the
8 economic benefits that can come from coal
9 conversion since we're talking about the
10 economy so much these days and the kinds of
11 jobs and energy prices and electric power and
12 so forth that can be presented by coal
13 conversion -- what the opportunities are.
14 They're pretty significant.

15 Now I don't know what the new
16 administration's going to do, and nobody
17 really does. But I guess I've looked at some
18 of the literature that's out there in terms of
19 what President-Elect Obama -- his new energy
20 site of his campaign. And it's really not all
21 that much different from some of the words
22 that we used in the National Coal Council's

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 reports.

2 And they did this in about six or
3 eight different variables. And there's a
4 certain amount of parallels in there. Now
5 many has slipped betwixt the cup and the lip.
6 I realize that. And I realize that we may be
7 talking about it next Wednesday, and they may
8 be talking about some Wednesday in 2022. But
9 the simple matter of fact, it's somewhere
10 between next Wednesday and 2022, perhaps. So
11 but there doesn't seem to be that tremendous
12 amount of divergence that we've kind of
13 expected. But this is just where we stand.

14 I'm a disciple of Joe Paterno at
15 Penn State, and I sort of take people at their
16 word until proven otherwise. And so I'll
17 continue to take that path. It's kind of the
18 high road.

19 Would be dumb not to proceed along
20 these lines is what I tell my kids because
21 this is what just 2 million barrels a day will
22 do. We can forget about Chavez, and the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Mexico decline, and the North Sea decline.
2 And we could buy some time here back into the
3 1990s. I mean, it's not an insignificant
4 accomplishment to move toward enhanced oil
5 recovery. These are meaningful numbers, and
6 great opportunities.

7 But none of that's going to happen
8 unless there's some of kind of incentives --
9 a regulatory regime which allows the CCS to
10 proceed. And of course, the EIA has come out
11 with a report just about ten days ago. I
12 don't know if you had a chance to read it yet.
13 But it basically says there's not enough being
14 done. And we even heard that this morning as
15 much is being done by the Department of Energy
16 and so forth. Everybody in the room probably
17 thought the same thing I did. That's not
18 enough. You've got to get more in there.
19 There has to be more money.

20 And it has to be some kind of
21 levelization of -- I mean, what can deliver.
22 That's seems to be the question. What is the

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 deliverability. And if coal hasn't proven
2 itself by now, maybe I guess it never will.

3 I focus on this slide a lot in one
4 of my classes too because what I emphasize is
5 energy is good. It's good to have energy.
6 Somehow we've adopted this sort of approach
7 that it's bad to have energy.

8 And I even read something -- I
9 don't know if I have the quote exactly right
10 -- but James Hansen from NASA said that coal
11 is the enemy of mankind. I mean, what an
12 outrage really.

13 We know what electricity can do.
14 This is an empirical fact. Societies with
15 electricity, they survive childhood which is
16 no mean feat in a society where 184 children
17 die before they're five years old out of
18 1,000. The people eat better. They have
19 cleaner, better water. They live longer.
20 They're better educated. Electricity makes
21 the difference.

22 And the group that it makes the

1 difference most for -- absolutely without
2 question -- are women and children. It
3 changes their lives. It can save lives. It
4 does.

5 If you go back and read the
6 literature on rural electrification in the
7 United States, you come up with all kinds of
8 examples of how the lives of farm women and
9 children change. But I don't have to read
10 that. I can speak from personal experience.

11 My wife and I have eight children.
12 And four of them are adopted from overseas.
13 And they're adopted from places that had no
14 electricity. And one of our boys can tell
15 stories about going to bathroom in a hole in
16 the ground because they had no running water.
17 He can tell stories about cooking in a little
18 hut for charcoal, and not being able to
19 breathe and going outside to be able to
20 breathe. They had no lights. They had no
21 electricity.

22 When he came to us and he was six

1 years old, he weighed 34 pounds. And today
2 with the benefits of electricity and all the
3 accoutrements, 20 years later he's a United
4 States Marine. That's what electricity can do
5 for you and the world.

6 So I don't need anybody to tell me
7 about the value of electricity. I know it.
8 And coal's the cornerstone and foundation of
9 that electricity. All around the world, it
10 has been, it is and will continue to be. It's
11 the basis of those benefits that I talked
12 about on the previous slide. And it will be
13 when over three billion people depend on coal
14 for more than half their electricity. That's
15 the only way they can get that electricity as
16 everybody in the room knows. They're not
17 going to get it in windmills.

18 And coal's in good places. It's
19 where it should be. These countries -- India
20 has virtually no oil and natural gas. China's
21 in pretty much the same boat. But yet they
22 have these huge populations. And they have

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 coal. Forty-two percent of the population has
2 40 percent of the coal. That's pretty good
3 distribution I think. So we have the coal in
4 the right places.

Now if we didn't have that coal --
if we didn't have coal, we'd have to go up to
a hell of a lot of energy on other fronts just
to replace the coal that we didn't have. I
mean, you can see. We'd have to go up like 60
TCF of natural gas if we didn't have coal.
We'd have to build 1,000 nuclear plants,
something like that. We'd have to come up
with a couple thousand Hoover Dams.

14 See, this is the scale I think
15 people don't quite understand -- the scale
16 that coal brings to the table in terms of its
17 contribution. The scale is gigantic. And
18 people just don't understand. Journalists
19 don't understand. Students don't understand.
20 The public doesn't understand. We're reaping
21 the benefits of a curriculum that has been
22 slowly watered down over two or three decades

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701
(202) 234-4433 www.nealrgross.com

1 in terms of scientific education.

2 As one of my colleagues at Penn
3 State said that Penn State, it's possible to
4 get a good education, but it's certainly not
5 required.

6 (LAUGHTER.)

7 DR. CLEMENTE: And you can see,
8 there's a couple University faculty members
9 and I know they probably would agree with me.
10 We've had this tendency to dilute the
11 curriculum in terms of science and
12 mathematics.

13 My daughter went to Johns Hopkins
14 University, and I think she snuck out of there
15 with one course in science called
16 Environmental Science where they picked up
17 litter on a road or something like that.

18 (LAUGHTER.)

19 DR. CLEMENTE: We're in the
20 context of demand that's unprecedented, as I
21 said in constrained supply. I have a little
22 paper coming out called East of the Suez. I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 stole that title from somebody. But it points
2 out basically where the action's going to take
3 place.

4 And I've been talking to a lot of
5 legislators and stuff like that. They don't
6 really -- and even my students -- they don't
7 want to hear it. They don't want to hear the
8 United States isn't really the core center of
9 the world anymore. But it's not.

10 Energy world? There's actions
11 taking place elsewhere. And that's just
12 something that -- a lot of the people know it
13 of course -- but there's a whole world out
14 there that's changing, and where the action's
15 going to be. This is where it's going to be
16 in the area of energy. Pretty significant
17 changes taking place.

18 China has caught on to this
19 already. And this is why I don't think
20 they're going to agree that there's no such
21 thing as clean coal whatever, because this is
22 poverty in China. And this is energy use

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 based on coal. And you can see the
2 difference.

3 And we're not talking here about
4 poverty where you don't get food stamps or
5 you've got rent subsidies. We're talking
6 about dollar-a-day poverty. You live on a
7 dollar a day.

8 Coal has changed the lives of
9 hundreds of millions of people in China and is
10 even held up as an example for the developing
11 world by the IEA, which makes sense, because
12 it has helped their society significantly.

13 But China is an old story, so to
14 speak. The new story is on the horizon to me.
15 And that's what could happen in India where
16 400 million people have no electricity, and
17 only 600 and some cooked with watered dung in
18 those little huts I was talking about. And
19 there's three times of the population of the
20 United States doesn't have any refrigeration.
21 They want the same things we do, and they're
22 going to get it one way or another I would

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 suspect. They don't really care what Al Gore
2 says over there. This horizon to me -- the
3 scale here is amazing to me.

4 So the world not surprisingly has
5 turned to coal. I got these data from Platts
6 and we've published them in different places.
7 But you can see whether we can get the 53 who
8 can say -- those are probably out of date
9 already. But you can see while we argue about
10 what some governor of Kansas is going to do,
11 and spend 14 months on that, China has already
12 built like 25, 30 coal plants already between
13 the time we even talk about it.

14 So the world is moving on. And
15 there's one justification for us to develop
16 coal CCS, and this slide has to be it. People
17 are building coal plants all around the world.
18 There's 1600 of them planned or being built.
19 And this is in the context I've just focused
20 on. This comes out of the report that I just
21 issued yesterday I guess, or the 12th that
22 they charged me so much money for.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

7 (LAUGHTER.)

8 DR. CLEMENTE: Now they're
9 starting to get on board. If you look at the
10 consequences of that, this is what you've got
11 to come up with new oil just in a few years.

19 So this is a big change in IEA.
20 Big. I don't think the press picked up on it
21 as much, because they don't have an
22 institutional memory even though they're an

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701
(202) 234-4433 www.nealrgross.com

1 institution. They don't go back and check
2 these predictions. That's why people like Dan
3 Yergin can run around and say oh, oil's going
4 to do this, production oil is going to
5 increase for seven years in a row. And that's
6 what we've got.

7 This is another one of the East of
8 Suez stories out of my paper. And that is
9 what's happening in other parts of the world
10 and the Middle East.

11 There's a guy in Texas. I don't
12 know if you've seen it. It's called the land
13 export model. It talks about how these
14 societies are going to be exporting less. And
15 it makes a lot of sense.

16 And so we can see that incremental
17 use of energy in the Middle East is going to
18 be pretty significant relative to the rest of
19 the world. And they may not be just exporting
20 as much as they had been. They see the added
21 value of building petrochemical plants over
22 there and chemical plants rather than building

1 them in Michigan.

2 Now where will the oil come from?

3 This is a busy slide that I actually excluded
4 and put it back in last night after I had a
5 couple of beers.

6 (LAUGHTER.)

7 DR. CLEMENTE: I'll put these on
8 my website. But this is what is projected to
9 be from the five areas that are supposed to
10 account for 70 percent of incremental supplies
11 through 2015 are these fives areas.

12 But if you look at the data and go
13 back and keep a record of what's been
14 canceled, what's not going to happen, I mean,
15 there's no way this can happen. This is
16 impossible. This cannot happen by 2015.
17 We're not going to have this much oil from
18 these areas.

19 The people are talking about
20 Africa's oil production declining, and Russia
21 too. So I mean, it's much more complex than
22 you read in these Platts News and all that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 stuff. There's all kinds of things happening.
2 You've got to put the whole puzzle together as
3 most of you know. So we're not going to get
4 that kind of oil from anybody. That's for
5 sure.

6 Now, my son is an expert on oil in
7 Mexico. And he has an article actually coming
8 out in December's issue of *Oil and Gas*
9 Journal. And I hate to mention that because
10 he got his accepted while mine was rejected.

11 (LAUGHTER.)

12 DR. CLEMENTE: It's the height of
13 humiliation when your kids starting publishing
14 articles in journals that reject your work.

15 But this is what he came up with
16 in terms of the exports and imports. And you
17 can see, this is another one of those sea
18 changes that's taking place in a stealth kind
19 of way. And of course, this is all due to
20 declining Cantarell, which is falling off a
21 cliff, and they don't have the resources to
22 replace it. They just don't have the money.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 They don't have the resources. They don't
2 have the technology. They don't have the
3 people. It's not going to be replaced. End
4 of story.

5 So what's the United States'
6 problems? I talked to my class and people I
7 go out and talk to when I talk to different
8 legislatures. And the one thing I do say is
9 that that shouldn't happen again, but it looks
10 like we're going down that same path. We're
11 just as dumb now as we were ten years ago I
12 guess.

13 What's it meant so far? Well, we
14 don't have to hypothesize or come up with
15 guesses. We know what it meant. That's what
16 happened to 2007. Now 2008's here. Who
17 knows? It's going to be bouncing all around.

18 But the price of natural gas in
19 those days was -- well, I don't know -- \$6.50,
20 something like that. It's doing \$6.50 today.
21 So we're going to face higher electricity
22 prices. That's for sure. And the more

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 natural gas, the higher the price is going to
2 be. And we've already gotten to that point
3 already.

4 So the dash to gas is already
5 whacked us pretty good. Now we're going
6 through another dash to gas right now. And
7 we're canceling coal plants. I don't have to
8 tell anybody in the room that. You all know
9 more than I do.

This is the danger we're facing right now. And NERC had this in 2007. And they kind of backed off on it. I don't know. I'd be glad to talk to anybody why they think they might have backed off on that. But NERC was really on the money here, talking about the danger of all this. And now they just joined a new revolution, I guess.

18 But that's where we're heading.
19 And I think this is a huge, gigantic mistake
20 that's going to cost us down the road.

We already get natural gas from
three sources. And everybody knows that. And

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com

1 some of this stuff is so elementary, I'm
2 ashamed to put it up. But like I said, I'm
3 presenting what I present to 5 or 6,000 people
4 a semester one way or another. So I'm looking
5 for advice.

6 We get it from North American
7 production, which I think you could make a
8 good argument it's already peaked. And
9 Canadian exports, and LNG, which is lowering.
10 But we have a substitute natural gas available
11 when we decide to use it. So that's where we
12 get our natural gas as you know.

13 Now people have talked about
14 another cartel. Well, people say well, you're
15 not going to have another cartel and all this
16 kind of stuff. Well, it's the same thing they
17 said back in the 1970s too. We're not going
18 to have an oil cartel. Go back and check the
19 literature. They're saying the exact same
20 thing.

21 But regardless of what Alan
22 Greenspan says, you still have this high

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 concentration in just five countries. In
2 fact, the concentration I think if you did
3 some kind of an analysis on this, probably
4 even higher, because you have two countries
5 accounting for 42 percent of the resource.
6 That seems like a lot to me. In two
7 countries, and neither one of whom are our
8 buddies.

9 Now there's a group that'd better
10 hope there's no cartel for sure. This is
11 Europe. This is how much gas they import now
12 from Russia. This is what they're projected
13 to import. So that's a pretty significant
14 increase. They're out on a limb.

15 There's a million quotes. I put
16 this one. The other one is they're walking
17 and sleepwalking. There's all kind of people
18 warning Europe that they could still go down
19 the same path.

20 Now this shows or at least gives
21 some documentation of my argument that we're
22 not really that big a deal in the big game now

1 in terms of the future in incremental growth,
2 because this is where we're going to be down
3 here in terms of increases in consumption
4 according to the EIA.

5 And these other areas are going to
6 be bringing in a lot more or needing a lot
7 more natural gas than us. And the competition
8 is going to be very rigorous. And we're
9 pretty far away from -- we're in the shipping
10 loans and so forth. It costs a lot to send it
11 to us, and particularly send it to California.

12 But nevertheless and based upon
13 formal predictions at the EIA, we are going to
14 be getting a lot of the natural gas in the
15 future from LNG -- 74 percent or so. We got
16 it previously from Canada. Now Canada you
17 can't count on anymore because guess what?
18 Their natural gas production is declining. So
19 you don't get that from them anymore.

20 So now you say okay, we'll just
21 balance the equation by -- who knows? This is
22 from EIA. And everybody who knows my work

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 knows that I've been a big critic of EIA,
2 published a couple articles that have gotten
3 their attention and irritation. In fact, when
4 I met with Howard Gruenspecht and we talked
5 about my research, he said if you're so god
6 damn smart, why don't you do natural gas
7 projections. I said give me \$100 million a
8 year and I guarantee I'll do the god damn
9 projections.

10 (LAUGHTER.)

11 DR. CLEMENTE: It costs a lot of
12 money these days to build liquefaction plants.
13 And one of the most amazing things to me, if
14 you'd read like page 63 of the California
15 Energy Policy, they're still projecting \$4.75
16 LNG. So I mean, what are you going to do?
17 They've been wrong every year for 14 years in
18 a row.

Now the real argument is not about
LNG. I think most people who really fault is
that LNG, they're not going to have the LNG
that they've projected until at least 2018, 19

1 or 20, and probably not even then.

2 So what are you going to do before
3 that? Well, everybody's saying we've got a
4 lot shale gas coming on. And this is a matter
5 of debate. And I was talking to Randy before
6 here. But this is what happened this year.
7 So I don't know what's going to happen in the
8 future.

9 Independence Hub came on. That
10 counted for some that knew the production.
11 And Retro Pipeline came on. So about 33
12 percent of the new production was a one time
13 event. It was an event either the Retro
14 Pipeline, or it was the Independence Hub. I
15 got this information from Apache. And Apache
16 doesn't even know. They were just sort of
17 guessing. But we know one thing. It wasn't
18 all shale gas. Okay?

19 So the projections are iffy as
20 they always are. Nobody really knows what's
21 going to happen and particularly in terms of
22 shale gas.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 Now if you read the literature on
2 shale gas and you talk to some people though,
3 go to some meetings, listen to some conference
4 calls, you find out that there's some pretty
5 significant speed bumps coming up on shale
6 gas. And not the least of which is this
7 financial change is taking place. And we now
8 have CapEx cut backs of over 40 percent. At
9 least people are starting to raise questions
10 about waste water.

11 Aubrey McLendon who may not be the
12 best person to use as his testimony since he
13 lost \$1.4 billion in the stock market recently
14 said it's going to be about \$10 in terms of
15 going forward -- natural gas. And so these
16 are all these issues that are coming up. In
17 fact, up in my area, I know one guy that has
18 like 75,000 acres and he was going to lease it
19 to some company. I don't know who it was.
20 Chesapeake I think it might have been. And he
21 was delayed because he thought he could get a
22 better price. And he started getting nervous,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 so he called Chesapeake up and said I really
2 want -- I'll sign your paper now. And they
3 said well, sorry, we're not proceeding
4 anymore.

5 So there's a lot of changes taking
6 place in the shale gas business. And nobody
7 really knows. But I don't think we're going
8 to come up with the shale gas production over
9 the next several years that everybody thinks
10 we're going to come up with. And one reason
11 of course is they're cutting back.

12 But people are still exuberant.
13 We're still a happy society. And we think
14 that we're going to be producing a lot more
15 natural gas even though we're spending a lot
16 less money to produce it. So we'll see what
17 happens. But I wouldn't bet on it.

18 We were told in 2000 natural gas
19 was going to be \$3 the rest of the decade.
20 And then we were told in 2004, it was going to
21 be \$4 the rest of the decade. And I say show
22 me the gas is what I say.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

10 Canada saved us here back in the
11 first half of this decade. Canada really
12 pulled our fat out of the fire without
13 question.

14 About alternative fuels? Well,
15 everybody here has talked about those, what
16 it's going to take to produce -- if you want
17 to replace coal and Jerry was talking before
18 about replacing coal, what you'd have to do in
19 the United States of course.

20 And this is something here -- this
21 business about not being able to store
22 electricity. I think this is proof of the

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 fact we have had this sort of dilution of our
2 scientific education. You can't believe the
3 people that don't know this. I mean I'm
4 talking about people in important positions.
5 They just don't know that. It's like a shock
6 to them that you can't just store electricity
7 and then just pull it out any time you want in
8 large quantities and power Pittsburgh by the
9 way. You can't do it.

10 So there's an educational gap
11 here. That's really one of the things I focus
12 on. I know there's about 2500 kids at Penn
13 State I believe are getting this lecture. So
14 I'm trying the best I can.

15 Now Tim and I did a study of what
16 it would take if you -- and then this isn't a
17 study. An idiot could do it out of a EIA
18 data. If you replace coal with natural gas,
19 there wouldn't be any left for anybody else in
20 terms of electric power. You'd just be using
21 it all for electric power.

22 And Tim did some calculations

1 saying the cost would increase like --
2 electricity would increase like 120 percent.
3 It can't happen even. But that's what would
4 happen. So anybody who thinks you can re-use
5 coal -- natural gas to replace coal -- this is
6 an issue of scale again. Scale is another one
7 of these areas I don't think people quite
8 understand how much energy it takes to power
9 all this.

10 Nuclear power? This is one area
11 where I know a little bit because I worked on
12 nuclear power plants and tried to get them
13 sited back in the '70s. And I'm a
14 sociologist. So I think that the
15 institutional roadblocks on nuclear power are
16 just so huge to me.

17 Now I have to admit I come from an
18 environment where I gave a lot of
19 presentations on nuclear power back in the
20 '70s. And one time I came out and somebody
21 had thrown a concrete block through my
22 windshield. So I come from a little bit of

1 nervousness about talking about nuclear power.

2 But the institutional roadblocks
3 seem to me -- not the technical ones at all of
4 course -- never was. But you think there's
5 opposition to coal -- which there is. There's
6 lots of it. But wait until you start bringing
7 nuclear power into the picture. Entrenched
8 opposition there. It's been around for a long
9 time.

10 So I don't think nuclear power is
11 going to be a -- there's no way we're going to
12 build 250 nuclear power plants. That's for
13 sure. Three might be good.

14 Here's a study we did. I stole
15 this data from some guy at Oakland at the DOE
16 Office. He did a study of what wind actually
17 delivered during a heat wave in California.
18 And you can see that in terms of the reading,
19 they would talk about delivery up here -- 2500
20 megawatts -- and what they actually showed up
21 with in terms of wind is way down here. This
22 is during a heat wave during 2006 in that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 five- or six-day period. Pretty substantial
2 differential.

3 There's a great study that just
4 came out. I just got it when I was walking
5 out the door. I mean, I can't say it's a
6 great study, but it looked great because I
7 haven't read it. I just read the abstract --
8 executive summary -- by a guy at the
9 Department of Economics at one of the
10 universities in Spain talking about capacity
11 factor for wind and how it's been
12 overestimated for the last ten years. It
13 looks like it's a pretty good study. I'll
14 send it to anybody that wants it.

I got this from Jay Apt who's a
Dean at Carnegie-Mellon. These are his
estimates on the costs to deliver electricity
to the northeast where there's about 55
million people. And you might have your own
estimates and I'm not here to argue those.
But you look here. This is what wind is going
to cost.

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 Time? I know. He's telling me I
2 need to get my ass off here. I know. I'm on
3 my next to last slide. These guys will be
4 glad to get rid of me.

16 Thanks so much. I'm sorry I took
17 so long.

18 (APPLAUSE.)

19 EXECUTIVE VICE-PRESIDENT BECK:
20 Thanks, Frank

21 We've had the pleasure to work
22 with Frank on numerous studies and things

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 And you ought to see him in a little group of
2 just six or eight people instead of in front
3 of the whole crew because he really didn't
4 speak his mind at all today.

5 (LAUGHTER.)

6 EXECUTIVE VICE-PRESIDENT BECK:
7 And we have the slides available except for
8 the ones he slid in after the couple of beers.
9 But we'll certainly make all those available.

10 And we probably have time for a
11 question or two as long as he promises to keep
12 his response to about an hour and a half.

13 (LAUGHTER.)

14 DR. CLEMENTE: I am sorry I took
15 so long. I apologize.

16 EXECUTIVE VICE-PRESIDENT BECK:
17 No, that's all right. We actually built it
18 in. I've heard you before.

19 (LAUGHTER.)

20 DR. CLEMENTE: I only have one
21 lecture in me.

22 EXECUTIVE VICE-PRESIDENT BECK:

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 Yes, right. It's 50 minutes come whatever and
2 high water. Right?

3 Tom Almeyer has a question back
4 here.

5 QUESTIONER: Thank you, Dr.
6 Clemente. I appreciate your insightful
7 remarks.

8 With respect to the potential for
9 wind power and the constraints on transmission
10 capacity, are you aware of any work that tries
11 to extrapolate out and assume an aggressive
12 program to build new transmission capacity of
13 what are the baseload needs of the United
14 States -- presumably wind could ever meet a
15 baseload need -- could wind provide in terms
16 of electricity in the United States?

17 DR. CLEMENTE: No. I'm not. But
18 that's something I'm hoping to see.

19 There's a couple papers that just
20 came out on wind but I haven't had a chance to
21 read them. And one of them was done by Texas
22 Public Policy Foundation, which some collected

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 a good bibliography on that. But if I come
2 across anything, I'll be happy to share it
3 with you.

QUESTIONER: I just -- by way of
reference, I'm a lobbyist with Arch. And when
you go up to Capitol Hill, there are many,
many policy makers, many of which are serious,
think there's unlimited potential for wind to
meet the electricity needs of the United
States.

11 DR. CLEMENTE: Well, this paper by
12 this guy in Spain I think might be helpful.
13 Of course, this deals with Europe. But I'll
14 send you a copy of that and see if that helps
15 at all. Because his basic point is that you
16 run around. People are saying there's 35
17 percent capacity factor with wind. And he
18 said that's what we've been saying for years,
19 and the wind industry been saying. But in
20 fact, it's only 21 percent.

21 This thing I put up by Jay Apt is
22 interesting. He said it would cost \$60

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 billion in transmission lines. I'll send you
2 that article too. I mean, that's a great
3 article. By the way, the title of it is Is
4 Renewable Standard Practical for a United
5 States. And renewable portfolio standard
6 answer no.

7 QUESTIONER: Professor, Andy
8 Patterson with Econergy.

I'm dying to get your freewheeling
remarks on climate policy and what that would
do to a lot of your cost curves given the
election results. What happens to natural gas
prices with a carbon cap, and how else are you
going to modify these charts in the offing?

15 DR. CLEMENTE: Yes. Well, that's
16 something we're working on with Tim. And I do
17 have two papers on that as a matter of fact.

18 On one we studied the impact of
19 these rising prices relating to carbon capture
20 and cap and trade on Indianapolis, and in
21 another one on Kansas City which I'll send
22 you. They're doubling for sure.

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701
www.nealrgross.com

11 And the impact on minority
12 segments of the population and female heads of
13 households -- that's another group -- are
14 going to be pretty substantial.

15 So I have two papers on that which
16 I'd be glad to share.

QUESTIONER: Because you're saying
natural gas and electricity prices will
double.

20 DR. CLEMENTE: Well, that's what
21 we came up with. Yes.

QUESTIONER: By when?

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 DR. CLEMENTE: Well, probably I
2 don't know what the data were. But sometimes
3 by 2015, 18.

4 There's just not enough natural
5 gas. I mean, that's it. I mean, to go back
6 to the other question on wind. I mean, where
7 in the hell is the wind going to come from?
8 I mean, Boone Pickens -- he canceled
9 everything. He even said natural gas has to
10 be at least \$9. Aubrey McClendon says \$10.
11 And somebody just told me before I came up
12 here, Aubrey McClendon told his stockholders
13 it has to be \$14 for him to make a profit.

14 EXECUTIVE VICE-PRESIDENT BECK: Or
15 it will probably in the next week.

16 Just in the interest of time,
17 we're going to have to close it down. But
18 Frank, thank you again. And he has been a
19 more than generous contributor to the National
20 Coal Council. So publicly I'd like to thank
21 him.

22 And in light of the issue papers

1 that we're talking about doing, we're going to
2 try to work with Frank to try to get those
3 into some of the audiences that he has had the
4 opportunity to speak before. So we'll be
5 working with Frank some more in the future.

6 So thanks again, Frank. We really
7 appreciate it.

8 (APPLAUSE.)

9 VICE-CHAIR EIMER: Our next
10 speaker is James Childress. James is the
11 Executive Director of the Gasification
12 Technology Council, a position he's held since
13 the Council was created in 1995.

He's also the President of
Childress Associates, a consulting firm
specializing in the analysis of public policy
and market issues affecting alternative and
emergency energy technologies. The focus of
his practice is on gasification and related
technologies.

Mr. Childress has had more than 25 years of experience in the energy and

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701
(202) 234-4433 www.nealrgross.com

1 alternative energy issues including working on
2 the staffs of the White House Conference on
3 Economic Development and the President's
4 Commission on Coal.

5 He also served as the Executive
6 Director of the Congressional U.S. National
7 Alcohols Fuels Commission. He was Research
8 Director for the Council on Synthetic Fuels,
9 and has been in private practice since 1985.

10 Mr. Childress has a B.A. Degree in
11 Political Science from Wabash College and a
12 Master's Degree in Urban and Regional Planning
13 from George Washington University.

14 Please welcome James Childress.

15 (APPLAUSE.)

16 MR. CHILDRESS: Thank you very
17 much. Good to be here.

18 A formidable challenge speaking
19 after Frank. But what I will do is give a
20 gasification centric focus in presentation
21 this morning. I was asked to address SNG and
22 CTL production using gasification. And that's

NEAL R. GROSS

REAL TIME COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 what I'll have my laser-like focus on.

2 I'll give you the message right
3 now if you want to leave early. And it's what
4 Frank said. In the U.S. given public policy
5 directions, given regulatory directions, given
6 market directions, we see the demand for
7 natural gas headed way north. We see the
8 price following that. And given our potential
9 customers downstream from gasification, which
10 is the chemicals, fertilizers, SNG, and fuels
11 markets, we see a very strong growth in the
12 U.S. for gasification technologies to provide
13 competitive products in a high natural gas
14 price environment.

15 I will say this, the title of the
16 organization is correct -- Gasification
17 Technologies Council. Early on it was
18 Gasification Research Council. Our members do
19 research. But the 80 companies involved in
20 our organization are involved in all aspects
21 of providing technologies, services, owning
22 and operating commercial-scale gasification

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

www.nealgross.com

(202) 234-4433

1 plants in the U.S. and around the world.

2 First slide. Why CTL? And these
3 first two slides I want to make another point
4 that's very important. In the national energy
5 debate, every advocate of every narrow pathway
6 to the future, that is if they're talking
7 about solar, if they're talking about wind, if
8 they're talking about increased domestic
9 drilling, they always promise lower energy
10 prices. I personally don't buy that. Our
11 members don't buy that. What it does offer --
12 what gasification will offer is lower
13 increases in energy prices as we go into the
14 future.

15 And let me give you an example. I
16 run the risk of angering people here. It's a
17 political issue. I call it hoax versus
18 reality. I have two things here. Drill here,
19 drill now, and pay less -- political slogan.
20 It's also a book by Newt Gingrich. Bright
21 fellow. He's an excellent speaker, an
22 excellent thinker. He was the keynote speaker

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 at our meeting here in Washington last month.
2 But when I saw him make his presentation on
3 this release at the American Enterprise
4 Institute, flowed very well, very nicely. The
5 logic is all there. But pay less is
6 overpromising. You cannot delivery that.

7 And the irony is Al Gore says the
8 same thing about his wind transmission system
9 in the United States. Solar people say that.
10 Ethanol people say that. We're not going to
11 pay less.

12 And why are we not going to pay
13 less? That's the second item. *The Wall*
14 *Street Journal* October 30th, excellent
15 article. Chevron project offers glimpse of
16 future: more work, less oil.

17 Why did I have those two
18 juxtaposed? Because Newt Gingrich in his
19 presentation at the American Enterprise
20 Institute cited that Brazilian oil field as a
21 perfect example of why we're going to be
22 getting more oil off the coast of the U.S. if

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 we do it. And I think we should, and I think
2 we will.

13 In the U.S., we had the
14 opportunity to gasify U.S. coal resources --
15 PetCo -- some biomass but not a lot, mine
16 mouth and ship that product -- a clean product
17 -- right to markets, not too far-removed from
18 U.S. coal fields.

19 I hope I don't ruffle any feathers
20 here, but it's an important point to raise.
21 Future energy prices are not going to be
22 cheaper by anything we're talking about in

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com

1 this room. And if they are -- and that's why
2 the current recession is slowing down
3 everything -- if they are cheaper, we're going
4 to stay stuck with no economic growth. But
5 there will in the future be no lower oil
6 prices, or lower energy prices as a result of
7 anything that we're doing. They're going to
8 be less expensive. That's the way I like to
9 refer to it.

10 Okay. What I'd like to do very
11 briefly is give you an overview of the
12 gasification industry. A lot of people don't
13 understand it. Coal gasification is an
14 important aspect, but there are a lot of other
15 products, a lot of other feedstocks. I'd like
16 to tell you what those are, where they are and
17 where the growth is.

18 Frank did an excellent job. I'd
19 call it the rush to natural gas. He calls it
20 the dash. He said potato. I say potato. But
21 that's what's happening. It's the movement
22 toward higher natural gas demand in the United

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 || States.

2 And then I'd like to talk about
3 what I call the gasification response, which
4 is the slate of products that gasification
5 makes possible, competing basically in a high
6 natural gas environment, and a high oil
7 environment, and also offers better prospects
8 for carbon capture and storage because of
9 lower costs of carbon capture and storage if
10 you use gasification to make these products.

11 And again, my slides I assume will
12 be available to everybody.

This is based upon a survey we did
in 2007. I'm hoping to update it next year.
But it's a snapshot of the growth in the
industry 2004 to 2007. You see the number of
operating plants, the number of gasifiers,
capacity growth, feedstocks. Let's dwell on
this a bit. Coal is the largest. And in
growth, coal is also going to be the largest.
And petroleum residuals are listed. And in
the U.S., some of that's going to be some Pet

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 Co. And the products.

2 The hit on gasification when we've
3 talked about IGCC in the past and people in
4 the power industry as they're saying well,
5 it's a chemical industry process. Well,
6 historically it is. You'll see that. Which
7 accrues to our benefit now because that's
8 where the market is headed. It's in nonpower
9 applications. And there's a lot of experience
10 around the world and in the U.S. gasifying
11 various feedstocks to make a range of
12 products.

13 So it's the sweet spot. We're set
14 to move into that market. Not to say there
15 won't be IGCC in the future. But it's a
16 higher cost option. Any power generation and
17 either pre-combustion or post-combustion CO₂
18 capture is a high cost option. And that's why
19 we're seeing the markets moving in a direction
20 away from IGCC, but with some important IGCC
21 developments going on.

22 Geographical distribution. What I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 want to get the point across here is that Asia
2 is very important, and Asia is growing.
3 Africa and the Middle East is a little
4 misleading. The red coal is generally in the
5 South Africa. The yellow growth -- that's the
6 pearl GTL product in the Middle East in Qatar.

7 So they literally gasify natural
8 gas to make syn gas, to make the Fischer-
9 Tropes liquids. But drop Africa and the
10 Middle East off of there, and you'll really
11 get a good picture of where the world is in
12 solids gasification today and going forward.

13 Okay. Where's the growth? Let's
14 get down into it a little bit more.

15 Shares of growth. This is for the
16 period 2004 to 2010. The differential in the
17 time frame, you'll notice we went from 2007 to
18 2010. That's because we did some
19 supplementary work on adding some newer
20 projects in. Given the fall off in some of
21 the projects because of the economic
22 situation, it may be a little lower.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 But 81 percent of the growth over
2 that six-year period will be in Asia. I have
3 that long leg there. That's one oil sands
4 project in Canada, but they're using
5 gasification of residues from the project to
6 basically inject steam SAGD -- if any of you
7 are familiar with that. It's a cleaner way of
8 extracting bitumen in the oil sands projects.
9 I think that's the future of oil sands in
10 Canada. But it's one project right now. But
11 I did want to highlight it there because I
12 think going forward, it resolves a lot of
13 environmental issues with regard to oil sands
14 mining in Canada.

15 This is it. This is the score
16 card. I wanted to put this up here to be as
17 simple as I could.

18 (LAUGHTER.)

19 MR. CHILDRESS: For those of you
20 who like baseball, football or anything, plant
21 start-ups projected between 2004 and 2010 in
22 the U.S., it's 29 to nothing. I actually

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 think that 29 may be low. Shell and GE have
2 announced a number of additional plants that
3 are not just licensed but starting up ahead of
4 schedule. And when we redo the database next
5 year, I think it's going to be bigger than 29
6 to nothing.

7 U.S., we are going to see some
8 start-ups. We're going to see Edwards Port,
9 I hope, somewhere in the 2012. Is 2012
10 realistic or a little farther out? And one or
11 two others.

12 But again, it's lopsided. China
13 has figured it out. I'll very briefly say why
14 they've figured it out. As a matter of
15 national policy, Frank I think showed the
16 reserve bases. China has no oil and natural
17 gas to speak of. And they've made the
18 decision they're going to use their coal
19 resources. And they're going to use them for
20 burning for power. But they're going to use
21 them for gasification to produce fertilizers
22 and chemicals. And that's exactly what that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 || 29 is comprised of. Huge industry.

Also what's not on there -- and I
don't even address it in here -- China is
developing its own gasification technologies.
We have had two presentations at our
conference over the last two years. The East
China University on Science and Technology --
ECUST -- remember that name -- has developed
a gasification technology that they're now --
I think they have something like 15 projects
in the pipe line to use that technology. And
I think the end result is going to be less use
of western technology -- and right now it's
Shell and GE -- and more use of domestic
Chinese gasification technologies.

I believe they may run into a problem with regard to the intellectual property problems if they try to introduce it in the U.S. But China's a big market, and they're going to be using that technology more strongly in the future.

Okay. Let's talk about the issue

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com

1 that Frank brought up. And this really gets
2 to the heart of it as far as this audience is
3 concerned because this is where gasification
4 is what I call an enabling technology for U.S.
5 coal resources to play in markets outside of
6 traditional power generation.

7 List of factors. Frank brought it
8 up. You're all aware of it. Except coal
9 opposition is not just a pulverized coal
10 plants. It's IGCC also.

11 There is a religious movement
12 coming out of the environmental community,
13 coming out of some other communities,
14 especially in Appalachia. They don't want
15 coal mined. They don't want coal used. And
16 it has now spread to include IGCC. It's coal
17 period. But it's also CO₂. And it would
18 impose costs on IGCC that put it even farther
19 at an economic disadvantage.

20 So what we've seen here is coal
21 opposition spreading to IGCC. There has been
22 pullback on a number of IGCC projects. And as

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 a matter of factor, a number have morphed into
2 SNG projects. And they make more economic
3 sense, as I'll get to shortly. But the bottom
4 line there is the path of least resistance for
5 power generation in the U.S. then becomes
6 natural gas.

I don't mention wind in here. But
I think the coal industry ought to embrace
wind generation. It sounds a little crazy.
But anybody who's going to do wind is going to
increase demand for natural gas. Anybody who
increases demand for natural gas is going to
raise the price. And you have entree for coal
gasification either in SNG or in products such
as fertilizers and chemicals.

16 It's several steps of logic down
17 the road. It's not going to happen overnight.
18 But I think that's going to be the ultimate
19 outcome of increased wind generation
20 construction in the United States.

So your natural gas prices are going to go up. We get by the economic

1 downturn we're in now, and I'll address that.

2 Long-term natural gas prices are headed north.

3 Natural gas-dependent industries and consumers

4 -- the fertilizer industry, the chemical

5 industry, homes and industries that burn

6 natural gas -- are going to feel the impact.

7 Gasification becomes a competitive alternative

8 in that sort of market environment.

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 going to be either natural gas or demand
2 destruction. People will just stop using
3 energy, electricity or whatever.

4 But there's a big shortfall there
5 that's a natural for natural gas. No pun
6 intended. And that's the niche that I think
7 gasification-based products can fit into.

8 So here it is. In a statement, in
9 a carbon-constrained world, I believe there's
10 going to be growing demand for gasification in
11 the face of rising natural gas and oil demand
12 and prices, and concern over energy imports.

13 Key sectors, as I've mentioned,
14 chemicals, fertilizers -- we're already seeing
15 this. We'll address it in a minute in a map
16 here.

17 Refinery Polygen -- for those of
18 you who this is a little bit outside of coal
19 and power. That's refineries gasifying Pet Co
20 resid to make hydrogen which they need because
21 of the heavy crude they have. Some
22 electricity. And there are refineries that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 are looking at producing fuels -- Fischer-
2 Tropes -- or methanol to gasoline as part of
3 their product slate.

4 Conoco Phillips at our conference
5 here last month announced a proposed
6 gasification project in their Sweeny refinery
7 in Texas. Large project. And it's going to
8 do all of these things. Primarily they need
9 the hydrogen for the refinery.

10 And finally, getting to the item I
11 was asked to address which is fuels, i.e.,
12 motor fuels, and substitute natural gas. We
13 are seeing very, very strong movement towards
14 substitute natural gas. As I mentioned, a
15 number of IGCC have morphed into SNG.

16 It is fungible in natural gas
17 pipeline systems. You don't need another
18 transport system for that. As a matter of
19 fact, Strategic Energy -- where is Bill Hoback
20 -- in Illinois just announced a contract with
21 one of the pipeline systems in the Midwest for
22 capacity for their SNG plant that they're

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealgross.com

1 developing in Illinois. Matter of fact, I
2 believe those gasifiers from Siemens are on
3 the boat. They're ready for delivery. So
4 that's some good news. So SNG is a growing
5 market.

6 Fuels. Motor fuels production.
7 The environmentalists hate it. But it offers
8 an opportunity because as I'll get to very
9 shortly, when you go either the Fischer-Tropes
10 route or the methanol to gasoline route, or a
11 number of the other indirect motor fuels
12 routes, you're producing a relatively pure
13 stream of CO₂. And depending on where that
14 plant is located, you have enhanced oil
15 recovery opportunities.

16 Or if it's not EOR, you at least
17 don't have to go through a separate step of
18 extracting CO₂ from the syngas stream. It's
19 there. It's there for the taking.

20 Ninety-plus percent of the
21 gasification capacity in the world today is
22 what we call industrial gasification or

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 product manufacturing. And I won't go into
2 the technical details, but as part of that
3 process you extract the CO₂ because your
4 downstream processes don't want it. And
5 today, it's vented because there's no economic
6 reason not to vent it or regulatory reason not
7 to vent it unless you have an enhanced oil
8 recovery opportunity. And those are fairly
9 rare where these gasification plants are
10 located.

11 So this is the way the
12 gasification market is headed into the United
13 States. I think it provides a big opportunity
14 for the coal industry. Mine mouth
15 gasification plants producing products. If
16 you can find a CO₂ buyer, you're even in
17 better shape.

18 This is it. This is a repeat.

19 That quote is a quote -- our
20 executive committee met in Houston just
21 earlier this week to go over plans for the
22 next year budget-wise and for our conference.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 And that's a direct quote from one of our
2 member's major gasification supplier -- one of
3 the two major gasification suppliers. And
4 that's a quote. They have no planned
5 gasification based U.S. project without a CCS
6 element built into it.

7 This says it all. This is why.
8 This is why gasification is a player if you're
9 in a carbon-constrained world. These are
10 numbers that were done jointly by MIT and
11 Eastman Chemical. And those are the carbon
12 capture and compression costs. Okay?

13 This is not talking about storage.
14 This is getting the CO₂ ready to put into the
15 ground. This is the differential in dollars
16 per metric ton of CO₂ captured and compressed
17 and is ready for storage. And you see the
18 declining costs there as you introduce
19 gasification. First IGCC. Then coal to
20 liquids. Then so-called industrial
21 gasification. And that is an Eastman term of
22 art basically for their chemicals production.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 The off shoot here is a map of
2 proposed U.S. gasification projects. There
3 are 28 on there. I could put 60 on there, but
4 you can't look people in the eye with some of
5 those.

6 This is my judgment on the serious
7 gasification-based plants that are proposed in
8 the U.S. Will they all go forward? No. Will
9 some of them go? Yes. But of those plants --
10 now this is not a capacity-based pie chart.
11 This is a number of plants-based pie chart.
12 We haven't done the capacity numbers because
13 we don't know enough about a number of these.
14 But as you'll see, IGCC only accounts for
15 about a quarter of the number of plants in the
16 U.S. that are on that prior map. Seventy-five
17 percent of the planned U.S. gasification-based
18 plants are going to produce fuels, motor
19 fuels, chemicals or SNG. And that SNG wedge
20 could get even larger I believe.

21 It's a fungible product. Easy to
22 get it into the pipelines. The price is going

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 up. And you're competing directly with
2 natural gas. And it's a low cost, carbon
3 capture and pressurization alternative, as are
4 all of these except for the IGCC.

5 Public policy. And I'll say this
6 before I introduce this slide. Our
7 organization does not take a lot of policy
8 positions because there are a lot of different
9 perspectives on things, except I'll mention
10 one because the EPA UIC proposed rulemaking,
11 we are going to have comments on that. It's
12 very important to our members on regulating --
13 the EPA regulating through Water Act injection
14 of CO₂. So we will have comments on that.
15 And I'll be happy to share them with you folks
16 of the Coal Council. I think we're going to
17 have them ready to go Monday.

18 But public policy. This is Jim
19 Childress on the telephone and in
20 conversations with people that -- and some of
21 these things have the flavor of what do you
22 want. Well, we want it all. It's that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 attitude. But there's a feeling among our
2 members that given the current economic
3 situation, you're going to need some sort of
4 public sector financial and policy support in
5 the U.S. for gasification-based plants to go
6 forward.

7 There are a small handful that are
8 far enough along they may be okay. But I
9 think for anybody in the front-end engineering
10 and design pre-feed right now, they're going
11 to need some sort of financial and/or policy
12 support.

13 There needs to be construction and
14 operation of commercial scaled gasification
15 manufacturing plants in the U.S. with CCS.
16 This is for reasons of public acceptance.
17 This is for reasons of commercial acceptance.
18 And if you want to read it in there, it says
19 that includes IGCC. And I hate to use the
20 future gen word because there are all sorts of
21 people all over the map with it. I believe
22 there's a fairly wide support in the industry.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 We're not going to put any GPS coordinates on
2 this. But we will say that something needs to
3 be built and operated at a commercial scale,
4 or close to commercial scale for power
5 generation with CCS to get things moving.

6 And I see Ric over there. I was
7 looking for you. I saw your name on the list.
8 And I see you laughing at me. But that's
9 okay. That's what I'm here for.

10 And then there need to be
11 incentives for industrial gasification that
12 recognizes its contribution. That is it's a
13 lower cost alternative to CCS. And we believe
14 industrial gasification should be recognized
15 either with tax incentives or other financial
16 incentives, and regulatory incentives, which
17 gets to the third item there -- fourth item.

18 Uniform national policy -- not
19 state-by-state policy -- on carbon regulation.
20 Regulation of emissions, incentives, liability
21 issues, which came up earlier, insurance
22 issues. All of these for early adopters of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 gasification with CCS.

2 We had a full morning at our
3 conference in October on this whole issue.
4 The conference -- we're a partner with EPRI --
5 and the history of the conference has been
6 what one of our members calls on bricks and
7 burners -- on a lot of the technical and
8 reliability issues. But there's more and more
9 interest on these types of policy and
10 regulatory issues, as well as project finance
11 issues that are important to people as they
12 are moving toward commercial scale plants.

13 And then I personally feel we need
14 a cease fire. I call it the zero-sum energy
15 war. Make your case for whatever your
16 technology is, or your path is. But leave
17 everybody else to make their case. And don't
18 try to plead your case by stepping on somebody
19 else and misrepresenting important aspects of
20 a particular technology or approach. It
21 doesn't help anywhere and it leads to
22 confusion.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Key unknowns. And this is from
2 the gasification industry. This is a no
3 brainer. How long will this economic downturn
4 last? And how bad will it be? Because
5 everything has stopped in its tracks, or
6 virtually stopped in its tracks.

7 The silver lining is capital
8 costs, construction costs, steel, concrete,
9 engineering, labor. That's cooling. The rise
10 is cooling. Some of it's reversing. But I
11 don't know if that silver lining compensates
12 for where we are right now in the economy.

13 And the other one is the direction
14 of national carbon policy. Something has to
15 be done. I think that's going to happen later
16 rather than sooner, given where the economy is
17 today. But there has to be a clear policy on
18 carbon. What do you have to do? What level
19 of emissions reductions do you have to
20 achieve? Cap and trade? Do you do this? Do
21 you do that? It has to be clear, and it has
22 to be unequivocal. And everybody has to know

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 what the rules. And the rules have to apply
2 equally across the board.

3 So with that, I will end. And if
4 there are any questions or comments, there's
5 my email address.

6 You see our website. I invite you
7 to that. We try to make it information rich.

8 But I'd be happy to answer any
9 questions except for Ric Fenton.

10 (LAUGHTER.)

11 EXECUTIVE VICE-PRESIDENT BECK:
12 Thank you, Jim.

13 First of all, I was privileged to
14 be at the Gasification Conference that Jim and
15 his operation held about a month ago I guess
16 here in D.C. We think we have a good crowd
17 when we fill the room and have about 80
18 people. What did you have? About 2,000 or
19 something like that?

20 MR. CHILDRESS: Just under 1,000.
21 Just under 1,000.

22 EXECUTIVE VICE-PRESIDENT BECK:

1 Well, they filled a ballroom up at the
2 Wardman, which was pretty impressive. So it's
3 quite an operation. So the support for these
4 kinds of comments is widely held within the
5 industry.

6 And with that, I'll shut up and
7 see if anybody does have any questions for
8 Jim, except Ric and Tom.

9 Oh. Tom does have a question.
10 I'm sorry.

11 QUESTIONER: Thank you, Jim. Tom
12 Almeyer with Arch Coal.

13 The section the Congress last fall
14 passed tax incentives -- Section 48a and 48b.
15 48a was power generation, the required CCS is
16 65 percent for industrial gasification, 75
17 percent. You showed that the analysis by MIT
18 and Eastman Chemical. Have you seen any cost
19 curves with respect to percentage of carbon
20 capture? We have been trying to educate the
21 Congress about the fact that when you put the
22 hurdle rate that high, you may not get

1 projects because all those are are really
2 research projects. They're not going to be
3 commercially viable. Have any of your members
4 done anything on that?

5 MR. CHILDRESS: I have not. But
6 we may in fact try to put something like that
7 together.

8 I don't know -- Stu, have you
9 folks done much on that?

10 But not a lot. It has to be done.

11 Of course, as you know and as I
12 know, there's a lot of gaming always going on
13 both in drafting legislation. And then once
14 it's done, people get creative in how to
15 achieve that percentage.

16 But no, it's a good point you
17 raise. And it's probably something we ought
18 to be doing.

19 QUESTIONER: Thank you.

20 EXECUTIVE VICE-PRESIDENT BECK:
21 Maybe time for one more. Anybody else? Dick.

22 QUESTIONER: Dick Bajura, West

1 Virginia University.

2 This is going to be a rambling
3 question that deals with coal to liquids. And
4 we've had these stories that say we can
5 produce coal to liquids at say \$50 a barrel.
6 Let's assume that's true. Let's assume that
7 the oil goes back up to \$140 a barrel.

8 You made in your comments the
9 assertion that the price will not go down.
10 Would there be an argument that would say
11 well, yes, we agree the price won't go down
12 because the last barrel wouldn't determine the
13 price, but if we did that technology in this
14 country would it ensure more economic or
15 energy security because supply would be there?
16 Would that be a fairly good argument?

17 MR. CHILDRESS: Well, it's a good
18 argument. And let me say this. Let's say we
19 build a coal to liquids plant in the United
20 States, and if I invest \$5 billion in that
21 plant, I'll sell that at market levels. I'm
22 not going to be a good citizen and sell it at

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealrgross.com

1 75 percent of market levels. That's the first
2 thing.

3 The energy security issue, I don't
4 use it a lot. And the reason I don't use it
5 a lot, I talk about supplemental supply. I
6 talk about diversity of supply because I don't
7 think we're going to produce ourselves out of
8 an interruption for instance. If Ahmadinejad
9 decides to take all of his oil wells with him
10 and twilight of the goods, I don't know.

11 But security, I don't use that. I
12 view things as being supplemental and as
13 giving us additional supply. And it's nothing
14 you can prove, but the price of oil, natural
15 gas or whatever won't be lowered. You know my
16 philosophy. But it probably is going to be
17 less expensive than it otherwise would have
18 been. How much? I don't know.

19 But the whole energy security
20 argument, and I've been this town for a while,
21 intellectually for me I have trouble
22 convincing myself that the nation's more

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealgross.com

1 secure because of one coal to liquids plant.

2 EXECUTIVE VICE-PRESIDENT BECK:

3 Thanks, Jim.

4 In the interests of time, I know
5 we've probably got several other questions.
6 But your email address is up there. We will
7 have the slides of the presentation available.
8 We'll send that out to folks. And I'm sure
9 Jim would love to chat with you either
10 electronically or actually using the
11 telephone.

12 So we appreciate you coming. And
13 thank you for your time and effort.

14 (APPLAUSE.)

15 VICE-CHAIR EIMER: Thank you, Jim.

16 Our last speaker is Harold Quinn.
17 Hal is President and Chief Executive Officer
18 of the National Mining Association. The
19 National Mining Association is the national
20 trade association for the U.S. mining industry
21 and represents coal, metal and industrial
22 mineral producers, mineral processors,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 equipment manufacturers and other supplies of
2 goods and services to the domestic mining
3 industry.

4 Mr. Quinn brings more than 20
5 years of experience to his current position.
6 And he has represented mining's interests
7 before the Executive, Legislative and Judicial
8 of government in a number of positions both
9 with the NMA and its predecessor, the National
10 Coal Association.

11 He served with the U.S. Department
12 of Interior in various capacities and is an
13 attorney with the U.S. Department of Labor.
14 Mr. Quinn is a graduate of Dennison University
15 and received his law degree from Wake Forest
16 University. He is admitted to practice in
17 North Carolina and the District of Columbia
18 and before the United States Supreme Court, as
19 well as various federal courts around the
20 country.

21 Please welcome Mr. Quinn.

22 (APPLAUSE.)

1 MR. QUINN: Thank you, Richard.

2 Good morning. I appreciate the
3 invitation to be here this morning to address
4 your meeting.

5 I thought what I'd do is try to
6 cover a little bit about recent elections,
7 what they may or may not mean, and then touch
8 upon a few of the issues that are very
9 important forefront on all our minds here.

10 You see a number of members of not
11 only NMA staff. Let me introduce Rich Nolan
12 in the back who's our Senior Vice President
13 for Government Affairs, and leads our advocacy
14 efforts. Luke Popovich with our
15 Communications Department.

16 I also see a number of members of
17 our extended NMA team here. In fact, I think
18 I saw a few of you yesterday in Florida when
19 I was down here at another meeting. So I'm
20 glad you all made it back.

21 Probably by any measure I think
22 it's difficult to argue that this recent

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 election is certainly historic in several
2 levels. First, this is the first Presidential
3 candidate since Jimmy Carter actually winning
4 a majority of the popular vote. Second, we
5 also have only twice in this particularly
6 century -- or the 20th Century I should say --
7 did the same party actually have back to back
8 victories in two ensuing election cycles. In
9 1930 and 1932 and 1950 and 1952 for
10 Republicans, and the earlier '30 and '32 was
11 the Democrats.

12 Now with the Senate picking up six
13 seats for the Democrats, clearly they're
14 closer but still short of their magic 60 for
15 a filibuster-proof margin. But that's not to
16 say that 57 or 58 is de facto filibuster-proof
17 margin as they can take a few of the more
18 moderate Republicans.

19 In the House, we had a 21-seat
20 pick up for the Democrats. That's clearly
21 shorter than some predictions of 30, and some
22 predicting optimistically a 40 at one point in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 time pick up in the House. Nonetheless, we
2 can't say anything but the fact of the pathway
3 for the Democratic party and their agenda is
4 much clearer and much easier.

5 On the Presidential level in the
6 Electoral College, we also saw the President-
7 Elect Obama pick-ups not only hold the seats
8 that John Kerry and Al Gore won in the
9 previous elections, but he picked up seven
10 that formerly went for President Bush. And
11 some of them very notable from the standpoint
12 of coal as well in Colorado, Florida, Nevada,
13 North Carolina, Ohio, even Indiana and
14 Virginia as well.

15 Now does this all translate into a
16 mandate? I suppose it would be difficult to
17 argue it doesn't. I think the real discussion
18 is what is that mandate. What specifically is
19 in that mandate?

20 I think Speaker Pelosi's recent
21 comments need to be kept in mind that in fact
22 this President-Elect comes into office

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

WASHINGTON, D.C. 20005-3701

www.nealgross.com

probably with the highest expectations in our lifetime. At the same time, with the recent events, he'll have to pick and choose and craft his agenda very carefully.

So with that in the forefront of everyone's mind, the question is what is the President's agenda -- at least what he spoke about during the campaign -- and what some of the other constituencies of his party, what remains on the table. It seems to me with the financial considerations we have right now and the bailout plan that the fiscal restraints that come with that with first a \$700 billion bailout and probably soon to reach a trillion,

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com

1 we talk about another stimulus package in the
2 near future, a number of the plates on that
3 table are not going to be served, so to speak.

4 We have, for instance, during the
5 campaign promises for tax cuts for the middle
6 class. We have health care reform. We have
7 energy independence. We have immigration. We
8 have education and funding for education. We
9 have obviously the reform and regulation of
10 financial institutions. So how does the
11 President, and how does his party sort through
12 all that?

I'm not here to give too many forecasts on that. You're going to be hearing and reading a lot about that in the coming days. We've already seen that a lot of that is really idle chatter. Maybe some of that is actually signals from the administration. But I think it's a lot of speculation at this point in time.

21 No matter what, even with coming
22 into this particular Congress with the margins

1 they have, many of the folks in the Democratic
2 party are going to be -- what's looming large
3 in their mind is the 2010 election. So that
4 may very well moderate what their particular
5 views are as well as their priorities and what
6 they decide ultimately should be part of that
7 mandate.

8 But we should also remember that
9 there's really two pathways to achieving your
10 agenda. There's obviously the legislative
11 pathway, and a number of variables even though
12 the margins may be different. There's also a
13 regulatory pathway. And when you control the
14 Executive Branch, your flexibility might be
15 more limited. Your authority may be more
16 limited by the law. But certainly the
17 variables and the potential impediments are
18 lower since you control the House so to speak,
19 and you control the levers.

And so the regulatory pathway as much as the legislative pathway will be the focus of our attention as well. In the near

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 term, the regulatory pathway will be a big
2 focus for the National Mining Association and
3 the coal industry.

4 There are a number of policies
5 that are under consideration. They're very
6 important to the coal industry. They will be
7 portrayed as midnight regulations or last
8 minute decisions. But they are not. All of
9 them have been under consideration for a
10 considerable amount of time. And some of them
11 were actually initiated during the Clinton
12 administration. But as a testament to our
13 very efficient regulatory process, it only
14 takes eight years to actually bring them to
15 closure.

16 (LAUGHTER.)

17 MR. QUINN: So be mindful of the
18 fact that when these come out and are
19 criticized as last minute decision, in fact
20 they are long term and very deliberate
21 decisions. They're very important to restore
22 and maintain the type of regulatory and public

1 policy stability that this industry needs to
2 attract investment and sustain the high family
3 wage jobs that it supports.

4 Let me turn to two issues --
5 energy and climate. Very important. They're
6 both linked, both as a pragmatic matter and as
7 a political matter. And at some point in
8 time, these two double pathways to success may
9 come into play particularly when it comes to
10 climate.

11 Now what we do know about these
12 issues, we do know the President-Elect's
13 positions on climate, on the cap and trade
14 program. We also know his positions on energy
15 independence and largely built on renewable
16 energy and green jobs. What we don't know is
17 how he is going and how his party will pursue
18 his objectives.

19 For renewable energy, renewable
20 electricity standard, it could be two at
21 tranches. It could be one. He might perhaps
22 go for a ten percent and then seek out a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 larger 25 percent objective as part of fuller
2 portfolio of climate change policies.

3 In climate in terms of what looms
4 in the background, one particular thing is
5 this regulatory pathway. We have the Supreme
6 Court's decision from last year that declared
7 that carbon dioxide and greenhouse gases
8 linked to climate change indeed qualifies as
9 pollutants under the Clean Air Act. And then
10 it's up to the Administrator of EPA to make
11 the decision of whether that linkage is
12 sufficient to make a finding that would then
13 trigger regulation of carbon dioxide and other
14 greenhouse gases through the existing Clean
15 Air Act.

16 The one advisor to the President-
17 Elect has already indicated that set down a
18 marker that suggests that they will give the
19 new Congress about 18 months to figure out how
20 it wants to proceed on climate. And if that
21 is not successful, then perhaps the hammer
22 will come down through existing regulatory

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 mechanisms under the Clean Air Act.

2 As you all know I'm sure, the
3 Clean Air Act is hardly a suitable tool to
4 address this complex problem. We don't need
5 to go through all the reasons why. But a
6 recent example that I might add is the recent
7 decision on the Clean Air Interstate Rule. If
8 we can't even have a flexible approach --
9 well, let me start with this. Many of us
10 should recall that the Clean Air Interstate
11 Rule was really a regulatory surrogate for
12 what was supposed to be the multi-pollutant
13 piece of legislation to deal with emissions
14 from power plants. And when that was
15 unsuccessful, this administration used as much
16 flexibility as they could in the existing
17 Clean Air Act to come up with a suitable and
18 rational and more efficient way to address
19 these issues as well as have some collateral
20 benefits for other pollutants like such as
21 mercury.

22 Now when the Court looks at the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 Clean Air Act and says this doesn't really cut
2 the mustard legally with respect to the type
3 of flexibility they're reading into it for NOX
4 and SO₂, can you imagine what the battles will
5 be about when it comes to carbon dioxide and
6 other greenhouse gases and mechanisms to lay
7 out there for that?

When it comes to technology which is a big part of the answer to our particular climate challenges, the President-Elect has some proposals to deal with providing funding to accelerate technology, both renewable as well as other clean coal technologies. I know that that's a really key part that we need to pursue.

So when I see it coming out in

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 terms of if I need to step over and try to
2 suggest a couple of pathways here, what I see
3 at least early on is if these issues are going
4 to be taken on by the new administration.
5 It'll probably be in some several pieces here.
6 We could see in RES, and we could also see
7 some other funding type of programs for
8 development and encouragement for renewables,
9 as well as clean coal technologies. Anything
10 they got scrapped up in the green job wrapper
11 probably has potential to get some headway int
12 his particular Congress.

Now when it comes to energy and it
comes to climate, let me just walk through a
couple points here about what coal has to
offer on that score. And I know I'm really
preaching to the choir here in terms of this
room because you all know the profile in terms
of what coal provides and in terms of the
energy backbone from mine to market. It is
the energy backbone of our country. It
provides 50 percent of our electricity, and is

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

1 predicted we'll be needing up to 54 percent by
2 2030 with a growing and expanding need for
3 more electricity in our economy. It's
4 efficient. It's affordable. It supports
5 high-paying family waged jobs throughout the
6 coal value chain.

7 Now when it comes to the climate
8 challenge itself, let me just pick from a
9 couple comments my past chairman, Jim Roberts,
10 the Chairman-CEO of Foundation Coal made last
11 fall. And I think these are important. These
12 are part of our message going forward with
13 respect to coal. He appeared last fall in
14 front of the Senate Energy and Natural
15 Resources Committee on a summit dealing with
16 energy and climate concerns. And some of the
17 points he made I think bear mention here.

18 First, he made the point that I
19 touched upon that coal is not merely
20 important, but it's really an indispensable
21 source of energy not only in the United States
22 but the world -- worldwide. And clearly our

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 electricity and the reliability of an
2 infrastructure that we have in this country
3 that's the envy of the whole world relies on
4 that.

5 The second point I think worth
6 focusing on for a moment is that those who
7 argue that decreasing use of coal and
8 addressing climate change concerns are
9 irreconcilable are really on the wrong side of
10 this particular debate. Because what is
11 really irreconcilable is trying to address
12 climate change without supporting full bore
13 development of more clean coal technologies
14 and specifically carbon capturing and storage
15 technologies.

16 Now Jim Roberts is not the only
17 one who believes that. Recently the
18 International Energy Agency has come out with
19 some analysis that makes the same conclusions.
20 In fact, one of their policy advisors has
21 recently stated that it's clear that without
22 coal and carbon capturing and storage, climate

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 policy will not be successful worldwide. And
2 second, it appears that over the long term
3 that coal with carbon capturing and storage is
4 going to be the most affordable low carbon
5 energy source in the world.

6 So those are two things that are
7 several points that need to be remembered, and
8 policy makers need to take heed of as we move
9 forward on these issues of energy independence
10 and climate change policy.

11 But one of the third points is not
12 only in terms of we need more accelerated
13 funding and more involvement and assistance
14 from the federal government in terms of
15 funding for research, development and
16 commercialization of this promising
17 technology.

18 And we also need to get over this
19 argument -- or false argument -- by some that
20 until the carbon capture and storage is
21 actually deployable on a commercial scale, it
22 should not be having any more build-up of our

1 full base generation in this country. It's
2 important I think to remember that like any
3 challenge and any technology, we've got to
4 walk first before we can run. It's very
5 important that we built several IGCC plants
6 without CCS before we even are able to build
7 them with CCS.

8 And in terms of carbon capture and
9 storage performance standards, we certainly
10 need to be able to build a few out there and
11 test them and see what the reliability and
12 operational considerations are with 20 percent
13 capture before we jump to something 65 percent
14 capture. But many of our opponents are
15 basically putting out on the block there a
16 standard that is really going to be difficult
17 to achieve in the short term, and they realize
18 that. And that's their answer to stopping our
19 particular source of generation from coal.

20 It's either like Jim Roberts'
21 analogy along these lines is he told the
22 Senate at that point in time, Michael Phelps

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealgross.com

1 would not have won eight Gold Medals in
2 Beijing if years ago he had not been allowed
3 in the pool until he was able to set world
4 records. And that's really the message we
5 have today.

6 Now I'll refrain from offering any
7 other forecasts about this administration's
8 first 100 days or the Congress. I'll call
9 upon that great philosopher Yogi Berra who
10 said that making predictions is always very
11 difficult, especially when it's about the
12 future.

13 (LAUGHTER.)

14 MR. QUINN: But what we can talk
15 about is returning to the new Congress and the
16 new administration, there are many new faces
17 out there. We have eight new faces in the
18 Senate. And we have about 53 new faces in the
19 House. So those new faces are new
20 opportunities for all of us to educate about
21 coal, educate about our role, and educate
22 about our value and our indispensability for

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 our future, not only for the coal industry,
2 but for our nation and the world itself.

3 So I look forward to working with
4 all of you as we try to advance that and bring
5 some of these faces -- these new freshmen --
6 through the whole university in the coming
7 year.

8 Thank you very much.

9 (APPLAUSE.)

10 EXECUTIVE VICE-PRESIDENT BECK:
11 Thanks, Hal. We appreciate it.

12 A question or two from the members
13 of the Council or you need to head out?

14 Anybody on the Council have any
15 questions, comments, any thoughts for Hal?

16 (No audible response.)

17 EXECUTIVE VICE-PRESIDENT BECK:
18 All right. Well, we thank you for your time
19 and for coming over. Good luck in the new
20 job. I know you've been there for years and
21 years. But congratulations and good luck as
22 you lead the Association forward. Thank you.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 (APPLAUSE.)

2 || EXECUTIVE VICE-PRESIDENT BECK:

3 Before I turn it back over to Chairman Miller,
4 I just want to make one announcement.

The United States Carbon Sequestration Council is kind of a new kid on the block. For those of you who are not aware, it's an education and outreach group that is working in the CO₂ sequestration area. And it was actually formed just a little bit ago. It's only about a year or so old.

12 But one of our old friends -- a
13 fellow named George Rudins -- is one of the
14 key players in that group. George was here
15 earlier. Many of you may have seen George.
16 He's a former principal deputy assistant
17 secretary for fossil energy. And they have a
18 left a few flyers out on the back table for
19 you to take a look at.

20 They've done like we have some
21 issues papers. And they've four of them that
22 address carbon capture and storage. So on

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

(202) 234-4433

www.nealrgross.com

1 your way out, you may want to pick one up or
2 take a look at it.

3 I talked to George and agreed that
4 in the future from an educational standpoint,
5 we ought to try to work together and sort of
6 get of make sure that we're reconciled in
7 terms of what we're doing instead of kind of
8 tripping over each other out there. And I
9 don't think that will be a problem because
10 he's an outstanding individual.

11 So I just wanted to make that know
12 to folks on the record so that on your way out
13 you get a chance to pick up some of that
14 information. And I'm sure -- give me a call
15 or shoot me an email if you want to get in
16 direct contact with George. I'm sure he would
17 be more than happy to visit with folks and do
18 a better job of explaining what the group is
19 all about. Thanks.

20 CHAIR MUELLER: Thanks, Bob. And
21 thanks to all our speakers today for taking
22 the time. A number of very interesting

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 topics. So thank you again.

2 This meeting is duly authorized
3 and publicized and open to the public. The
4 public can submit comments to the Department
5 of Energy. Or if any individual wishes to
6 speak, they may do so at this meeting. Those
7 who wish to speak may do so at this time.

8 Does any member of the public wish
9 to speak?

10 (No audible response.)

11 CHAIR MUELLER: Let me announce
12 that we plan to hold the next full Council
13 meeting in the spring of 2009 with the exact
14 date and location to be determined after the
15 new Secretary of Energy is confirmed.

16 And with that, if there is no
17 other business to come before the Council, we
18 stand adjourned. Thank you.

19 I'm sorry. Sy?

20 QUESTIONER: Sy Ali. I want to
21 submit a request to the executive committee
22 regarding the communication committee which

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

www.nealrgross.com

1 was serving as an interface or a conduit
2 between the Council and the public. I'd like
3 to urge the executive committee to look into
4 that and consider its continuation.

5 EXECUTIVE VICE-PRESIDENT BECK:
6 Mike, you can answer that. But yes, I think
7 we'd like to work with the leadership to maybe
8 reconstitute the communications committee, and
9 be happy to take that under consideration and
10 work with the officers.

11 CHAIR MUELLER: Thank you, Sy.

12 || Anything else?

13 (No audible response.)

14 CHAIR MUELLER: Okay. With that,
15 we stand adjourned. Thank you.

18

19

20

21

22

NEAL R. GROSS
COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701 www.nealrgross.com
(202) 234-4433

A	Activities 23:5 activity 26:11 ADA 2:13 add 11:19 23:9 138:6 added 70:16,18 71:20 adding 41:9 104:19 addition 7:4 17:16 36:19 additional 50:16 106:2 126:13 address 35:13 46:22 96:21 107:3 110:1 111:15 112:11 122:5 127:6 129:3 138:4,18 142:11 147:22 addressing 142:8 adequate 58:3 Adjourn 5:22 adjourned 149:18 150:15,17 administration 11:5 11:14 19:8,11 38:7 39:15 40:8 43:6,11 46:14,21 47:8,22 133:18 135:12 138:15 140:4 145:16 administration's 59:16 145:7 Administrator 137:10 admit 85:17 admitted 128:16 adopted 62:6 63:12 63:13 adopters 119:22 adoption 5:4 8:2 ADRIENNE 4:17 adsorbents 19:19 adsorption 19:20 advance 24:17 29:20 34:22 37:4 146:4 advanced 13:16 15:22 16:16 27:8	28:19 40:22 advancing 24:20 29:21 36:18 37:2,7 advantages 43:5,6 advice 30:11 45:8 76:5 advisor 10:4 137:16 advisors 139:9 142:20 advisory 7:8 30:9 advocacy 129:13 advocate 98:5 Affairs 129:13 affiliation 7:20 31:2 affordable 44:8,12 141:4 143:4 Africa 104:3,5,9 Africa's 72:20 agencies 37:1 Agency 3:2 16:8 18:11 23:11 24:10 29:15 142:18 agenda 5:4 6:16 7:6 7:22 8:2 47:11 131:3 132:4,15 134:10 aggressive 90:11 ago 10:14 18:10 45:22 46:2,3 61:11 74:11 122:15 145:2 147:11 agree 66:9 67:20 125:11 agreed 30:19 148:3 agreement 18:2 ahead 106:3 Ahmadinejad 126:8 Air 137:9,15 138:1 138:3,7,10,17 139:1 AI 69:1 99:7 131:8 Alan 76:21 Albanese 42:10 alcoholism 54:14 Alcohols 96:7 Ali 1:15 149:20 aligned 11:10 aligning 13:8	Allen 4:8 allow 11:18 allowed 145:2 allows 61:9 ALMA 3:17 Almeyer 90:3 123:12 alternative 83:14 95:17 96:1 110:7 110:17 117:3 119:13 ALTIZER 1:16 ALTMEYER 1:17 amazing 69:3 79:13 ambitions 55:2,3 ambitious 24:15 Ameren 1:13 America 2:7 14:5 American 2:19 3:4 3:8,17 11:4 20:17 76:6 99:3,19 ammonia-base 22:13 amount 60:4,12 135:10 amounts 28:22 analogy 144:21 analysis 77:3 95:16 123:17 142:19 ANDRE 1:17 Andy 92:7 and/or 118:11 angering 98:16 ANITA 2:12 Annapolis 2:19 announce 149:11 announced 22:11 106:2 112:5,20 announcement 26:5 147:4 Annual 110:11 answer 12:5 13:6 31:18 33:17 34:4 57:7 92:6 122:8 139:15 144:18 150:6 anticipate 54:13 anybody 23:19 48:1	54:1 64:6 73:4 75:8,13 84:19 85:4 87:14 109:10,11 118:9 123:7 124:21 146:14 anymore 58:19 67:9 78:17,19 82:4 anytime 12:3 Apache 80:15,15 apologize 89:15 Appalachia 108:14 appeared 53:2 141:13 appears 143:2 APPLAUSE 53:14 88:18 95:8 96:15 127:14 128:22 146:9 147:1 applications 19:21 26:8 103:9 applied 22:20 apply 122:1 appointed 8:12 appointments 9:10 appreciate 8:1 12:16 38:8 90:6 95:7 127:12 129:2 146:11 appreciated 30:13 approach 62:6 120:20 138:8 approve 51:12 approved 51:9 approximately 20:8 April 14:4 Apt 87:15 91:21 Arabia 44:5 88:12 Arch 1:17 91:5 123:12 area 11:17 13:18 23:9 67:16 81:17 85:10 147:9 areas 9:20 11:4 18:1 32:9,17 35:2 46:14 72:9,11,18 78:5 85:7 93:7 argue 69:9 87:20 129:22 131:17
----------	--	--	--	---

142:7	134:22	124:22	116:20 118:21 119:13	boat 64:21 113:3 Bob 1:22 2:13,18 3:17,19 4:15 30:17 45:11 46:11 51:19 148:20
argument 76:8 77:21 79:19 125:10,16,18 126:20 143:19,19	attitude 118:1 attorney 128:13 attract 136:2 Aubrey 81:11 94:10 94:12	balance 78:21 BALLES 1:19 ballroom 1:9 123:1 BANKSTON 1:19 BARB 1:16 BARBARA 4:7 Barna 1:20 8:17,17 BarnaSolutions 1:20 Barney 3:16 4:4 barrel 125:5,7,12 barrels 60:21 100:7 base 144:1 baseball 105:20 based 68:1 78:12 102:13 115:5 baseload 90:13,15 bases 106:16 basic 4:11 91:15 basically 42:15 48:20 56:16 61:13 67:2 102:5 105:6 115:22 144:15 basis 18:18 23:3,13 36:20 64:11 bathroom 63:15 battles 139:4 bear 141:17 Beck 1:14,21 30:16 30:17 32:22 35:21 37:19 38:14 47:14 49:4 51:20 88:19 89:6,16,22 94:14 122:11,22 124:20 127:2 146:10,17 147:2 150:5 Beer 1:21 42:7 beers 72:5 89:8 began 19:5 26:17 beginning 48:19 behalf 12:18 Beijing 145:2 belief 28:3 believe 11:8 15:14 55:1 57:4,10 84:2 84:13 107:16 111:9 113:2	believes 142:17 beneficial 25:15 benefit 24:4 103:7 benefits 27:18 59:2 59:8 64:2,11 65:21 138:20 BERL 1:22 Berra 145:9 BESSETTE 1:22 best 14:19 29:19 81:12 84:14 bet 82:17 better 12:4 62:18,19 62:20 77:9 81:22 102:7 114:17 148:18 betwixt 60:5 beyond 14:11 BEZDEK 1:23 bibliography 91:1 big 11:16 54:18 70:19,20 77:22,22 79:1 107:19 111:4 114:13 135:1 139:15 bigger 106:5 biggest 57:10,18 bilateral 36:20 Bill 1:25 2:5,14,23 4:2,13 8:18 112:19 billion 12:2 57:20 64:13 81:13 92:1 125:20 132:21 biomass 100:15 Bird 1:23 38:21 47:19 bit 33:20 85:11,22 102:19 104:14 110:10 111:18 129:6 147:10 bitumen 105:8 Black 53:4 93:4 block 85:21 144:15 147:7 board 3:11 9:11 70:9 83:3 122:2	bodies 29:17 book 98:20 Boone 94:8 bore 142:12 boring 48:5 bottom 109:3 bouncing 74:17 boundaries 20:19 BOYCE 1:24 boys 63:14 brainer 121:3 Branch 43:12 134:14 Brazilian 99:20 breathe 63:19,20 BRENT 3:13 bricks 120:6 bridges 31:21 brief 14:2 briefing 52:11 briefly 101:11 106:13 Bright 98:20 bring 135:14 146:4 bringing 36:4 78:6 86:6 brings 65:16 128:4 brink 11:16 British 21:19 broad 10:21 41:15 broader 35:17 37:16 brought 15:20 108:1,7 BROWNELL 1:25 BRUBACKER 2:2 BUD 4:8 buddies 77:8 budget 19:6 51:10 51:13,19 budget-wise 114:22 build 65:11 79:12 86:12 90:12
ASSIST 10:8 31:13 33:15 36:7 38:12 assistance 143:13 assistant 5:5 6:13 9:13 43:13 147:16 associated 31:11 Associates 2:10,14 8:20 36:2 95:15 association 2:4,5,17 3:18,19 6:22 8:19 127:18,19,20 128:10 135:2 146:22 assume 90:11 102:11 125:6,6 assumed 59:7 ATTENDEES 1:12 2:1 3:1 4:1 attention 30:15 79:3	Babcock 1:19 3:5 4:18 back 36:16 45:4,10 47:4,5 61:2 63:5 71:1 72:4,13 76:17 76:18 82:11 83:10 85:13,19 90:3 94:5 125:7 129:12,20 130:7,7 147:3,18 backbone 140:20,21 backed 75:12,14 background 39:10 137:4 backs 81:8 bad 62:7 121:4 BAILEY 1:18 bailout 132:20,22 Bajura 1:18 33:2,2	B babcock 1:19 3:5 4:18 back 36:16 45:4,10 47:4,5 61:2 63:5 71:1 72:4,13 76:17 76:18 82:11 83:10 85:13,19 90:3 94:5 125:7 129:12,20 130:7,7 147:3,18 backbone 140:20,21 backed 75:12,14 background 39:10 137:4 backs 81:8 bad 62:7 121:4 BAILEY 1:18 bailout 132:20,22 Bajura 1:18 33:2,2		

125:19 144:6,10 building 69:17 71:21,22 build-up 143:22 built 69:12,18 89:17 115:6 119:3 136:15 144:5 bull 70:6 bumps 81:5 Burke 2:4 42:16 burn 110:5 burners 120:7 burning 13:2 106:20 Bush 19:8,11 131:10 business 5:7 7:5 9:18 38:18 52:19 82:6 83:21 149:17 busy 72:3 buy 61:2 98:10,11 buyer 114:16 byproduct 34:14 B.A 96:10	candidate 130:3 Cantarell 73:20 cap 92:13,20 121:20 136:13 capabilities 58:15 capable 14:1 25:13 capacities 128:12 capacity 10:16 20:7 20:9 21:10 26:20 87:10 90:10,12 91:17 102:18 112:22 113:21 116:12 capacity-based 116:10 CapEx 81:8 capital 121:7 Capitol 91:6 capture 11:17 13:18 17:6 18:7,15 19:2 19:13,16 21:7 22:12,14 24:15 25:9,12,13,20 26:1 27:10 29:10,20,21 41:20 44:18 46:9 57:9,15 92:19 102:8,9 103:18 115:12 117:3 123:20 143:20 144:8,13,14 147:22 captured 115:16 capturing 142:14 142:22 143:3 carbon 9:20 11:17 13:4 14:13 17:5 18:6 19:1 20:12,14 24:13 29:10,13,20 29:21 33:8,9 37:6 41:20 44:18 57:8 57:15 92:13,19 102:8,9 115:11 117:2 119:19 121:14,18 123:19 137:7,13 139:5 142:14,22 143:3,4 143:20 144:8 147:5,22	carbon-constrained 111:9 115:9 card 105:16 care 69:1 133:6 career 33:22 carefully 132:4 CAREY 2:4 Carnegie-Mellon 87:16 CAROL 1:18 Carolina 128:17 131:13 CAROLYN 3:23 cartel 76:14,15,18 77:10 Carter 130:3 case 120:15,17,18 cases 22:9 41:2 catch 56:8 Caucas 93:4 caught 67:18 cause 24:17 Caylor 2:5 8:18 CCPI 25:6,7,11 CCS 18:7,7 19:12 19:13 24:17,20 25:19 27:6 28:21 37:13 58:5 61:9 69:16 115:5 118:15 119:5,13 120:1 123:15 144:6,7 cease 120:14 center 1:18 2:19 29:15 52:16 67:8 centric 96:20 century 130:6,6 CEQ 2:13 certain 60:4 certainly 47:6 66:4 89:9 130:1 134:16 139:13 144:9 cetera 42:18 Chaconas 50:6 chain 141:6 chair 1:10,13 6:3 8:4,7,10 9:3 38:17 39:8,15 49:13,15	Chief 127:17 childhood 62:15 children 6:5 62:16 63:2,9,11 Childress 2:5 5:13 6:19 95:10,15,21 96:10,14,16 105:19 117:19 122:20 124:5 125:17 China 67:18,22 68:9,13 69:11 106:12,16 107:3,7 China's 64:20 107:19 Chinese 36:4,10,20 37:16 107:15 choir 140:17 choose 132:3 CHRIS 3:16,18 CHRISTINE 2:9 Christopher 8:22 CH2M 3:17 CIBO 1:22 CICIO 2:6 cited 99:20 citizen 125:22 City 92:21 civic 43:9 clarify 53:17,20 CLARK 2:23 class 54:9 74:6 133:6 classes 62:4 clean 1:15 11:9,14 25:5 29:15 44:16 67:21 100:16 137:9,14 138:1,3,7 138:10,17 139:1 139:19 140:9 142:13 cleaner 62:19 105:7 cleanly 12:6 clear 31:18 49:6 56:19 121:17,21 142:21 clearer 131:4 clearly 12:4 35:10
---	---	---	--

130:13,20 141:22 Clemente 2:8 5:10 6:17 41:14 42:2 52:9 53:13,15 57:1 66:7,19 70:8 72:7 73:12 79:11 89:14 89:20 90:6,17 91:11 92:15 93:20 94:1 cliff 73:21 climate 13:5 18:9 27:17 30:2 35:12 37:2,17 57:14 92:10 136:5,10,13 137:2,3,8,20 139:16 140:14 141:7,16 142:8,12 142:22 143:10 Clinton 135:11 close 94:17 119:4 closely 23:10 closer 130:14 closure 23:8 135:15 coal 1:1,14,16,17 2:4,5,15,19,23 3:17 4:5,19 5:18 6:5,8 8:18 9:17 11:7,9,14,18,22 12:10,14,22 13:16 17:12,17 25:5 27:9 28:19 29:15 30:8 30:18 40:9,10,12 40:22 41:15 42:2 42:10,16,17,20,22 44:4,7,11 48:2 57:4,6 58:9 59:8 59:12,22 62:1,10 64:13 65:1,2,3,5,6 65:8,10,16 67:21 68:1,8 69:5,12,16 69:17 75:7 83:17 83:18 84:18 85:5,5 86:5 88:10,14 94:20 96:4 100:8 100:14,18 101:13 102:19,20 104:4 106:18 108:5,8,9 108:15,15,16,20	109:8,13 110:13 110:17 111:18 114:14 115:19 117:16 123:12 125:3,5,19 127:1 127:21 128:10 131:12 135:3,6 139:19 140:9,15 140:19 141:6,10 141:13,19 142:7 142:13,22 143:3 144:19 145:21 146:1 CoalTek 3:18 8:22 coal's 64:8,18 coal-based 16:5 17:19 18:6 20:7 22:10 coal-fired 26:20 42:7,8,12 46:18 Coal-to 5:13 Coal-to-Natural 5:14 coast 99:22 coherent 132:6 collaboration 29:7 29:9,22 31:20 36:5 collateral 138:19 colleagues 66:2 collected 90:22 college 55:4 96:11 131:6 Colorado 131:12 Columbia 21:19 128:17 combined 16:15 combustion 19:17 19:17 22:14 40:22 come 18:8 22:7 24:2 25:2,4 46:21 49:16 54:13 58:19 59:8 61:10 63:7 65:12 70:11 72:2 74:14 82:8,10 85:17,22 90:1 91:1 93:8 94:7 132:21 135:18 136:9 137:22 138:17	142:18 149:17 comes 47:8 59:3 69:20 70:6 131:22 136:9 139:5,14 140:13,14 141:7 coming 36:20 38:7 38:10 42:1 66:22 73:7 80:4 81:5,16 108:12,13 127:12 132:8 133:15,21 139:22 146:6,19 comments 7:13 37:7 45:4,10,14 47:4 48:15 117:11,14 122:4 123:4 125:8 131:21 141:9 146:15 149:4 Commerce 2:18 commercial 22:17 25:9,18 27:7,22 118:14,17 119:3,4 120:12 143:21 commercialization 143:16 commercially 22:20 124:3 commercial-scale 97:22 Commission 4:22 9:8 96:4,7 Commissioner 27:1 commitment 14:12 committed 14:5 committee 7:8 30:10,10 48:19 49:15,20 50:1,2,4 50:5 51:8,9 114:20 141:15 149:21,22 150:3,8 committees 48:13 common 20:20 28:18 communication 149:22 communications 129:15 150:8 communities 35:2 52:20 108:13	community 35:7,8 36:10 54:7 93:3 108:12 companies 18:20 32:3 97:19 company 1:13 3:5 3:15,25 4:10 81:19 compensates 121:11 competing 102:5 117:1 competition 78:7 competitive 97:13 110:7 complete 7:15 28:17 33:17 completed 12:8 completes 26:10 complex 72:21 138:4 compressed 115:16 compression 115:12 comprised 107:1 compromised 20:21 concentration 77:1 77:2 conceptual 58:11 concern 18:9 35:3 111:12 132:9 concerned 108:3 concerns 35:19 41:17 132:7 141:16 142:8 concise 40:18 concludes 52:1 conclusions 142:19 concrete 85:21 121:8 conduct 7:5 21:17 50:6 conducted 21:11 conduit 150:1 conference 39:19 81:3 96:2 107:6 112:4 114:22 120:3,4,5 122:14 confidence 34:20 confident 11:13	confirmed 149:15 confusion 120:22 congratulations 9:9 146:21 Congress 40:8 41:3 43:14 47:22 123:13,21 133:22 137:19 140:12 145:8,15 Congressional 93:4 96:6 CONGRESSMAN 3:21 conjunction 42:9 Connaughton 2:8 2:22 connect 13:12 Conoco 112:4 consequences 70:10 Conservationist 3:21 consider 150:4 considerable 135:10 consideration 135:5 135:9 150:9 considerations 132:19 144:12 Considine 59:4 Constellation 3:8 constituencies 132:17 constitute 24:14 constrained 66:21 constraints 90:9 construct 48:6 construction 19:18 26:17 27:9 29:1 109:20 118:13 121:8 Consultant 2:4,21 2:25 consulting 1:15 95:15 consumers 2:6 3:14 110:3 consumption 78:3 CONT 2:1 3:1 4:1
---	---	---	---	--

contact 93:9 148:16	87:17 102:9	34:19 103:17	41:20	declare 33:13
context 66:20 69:19	108:18 115:12,18	108:17 113:13,18	damn 79:6,8	declared 137:6
continual 33:7	121:8,8	114:3,16 115:14	Dams 65:13	decline 61:1,1 70:3
continually 44:15	Council 1:1,3,8,14	115:16 117:14	Dan 3:2,15,25 70:4	110:15
continuation 150:4	1:16 2:6,8,14,19	147:9	71:2	declining 72:20
continue 11:19	5:7 6:6,8,20 7:1,6	CQ 2:23	danger 75:10,16	73:20 78:18
50:21 51:6 57:13	7:21 8:13 12:12	craft 132:4	dash 75:4,6 101:20	115:18
60:17 64:10	15:3 17:17 30:8,18	crazy 109:9	data 14:16 34:22	decrease 110:15
continuing 38:4	30:20 38:1,18,20	created 95:13	45:19,22 46:6 69:5	decreases 44:9,11
contract 112:20	40:12 44:22 48:2	creating 20:2	72:12 84:18 86:15	decreasing 142:7
contributed 52:10	49:7 50:6,15 51:5	creative 124:14	94:2	deep 9:22 21:20
contributes 13:5	51:10,12 58:9	credit 53:20 54:3	25:21	
contribution 50:16	94:20 95:12,13	crew 89:3	degree 96:10,12	
57:11,19 65:17	96:8 97:17,18	critic 79:1	128:15	
119:12	117:16 146:13,14	critical 12:22 13:18	DELALLO 2:12	
contributions 57:14	147:6 149:12,17	35:14	delayed 81:21	
contributor 94:19	150:2	criticized 135:19	deliberate 135:20	
control 55:19	Council's 50:17	cross 10:21 56:11	delineated 20:19	
134:13,18,19	59:22	Crotty 2:10 8:20	deliver 27:4 61:21	
convened 1:8 41:5	Counsel 2:21 3:14	36:1,1	87:17	
conversations	count 78:17	crowd 122:16	deliverability 62:1	
117:20	counted 80:10	crude 111:21	delivered 86:17	
conversion 57:7	countries 37:10	CTL 96:22 98:2	delivery 86:19 99:6	
59:9,13	64:19 77:1,4,7	Cummins 3:7	113:3	
converted 46:17	country 12:1 34:5	CUNNINGHAM	demand 56:21 57:5	
convey 44:2	50:20 125:14	2:10	66:20 97:6 101:22	
convincing 126:22	128:20 140:21	cup 60:5	109:11,12 111:1	
cooked 68:17	142:2 144:1	curious 31:8	111:10,11	
cooking 63:17	couple 10:14 36:13	current 19:6 24:22	demo 32:15	
cooling 121:9,10	38:16 65:13 66:8	45:18 101:2 118:2	Democratic 131:3	
cooperation 37:15	72:5 79:2 89:8	128:5	134:1	
coordinate 45:12	90:19 140:2,15	currently 22:1	Democrats 130:11	
coordinates 119:1	141:9	curriculum 65:21	130:13,20	
copy 7:22 91:14	course 12:7,21 13:5	66:11	Demography 53:9	
CORDNER 2:9	54:4 56:17 61:10	curves 92:11 123:19	demonstration	
core 67:8	66:15 67:13 73:19	customers 97:9	13:17 18:15 25:12	
cornerstone 64:8	82:11 83:19 86:4	cut 81:8 139:1	26:12	
Corporation 2:15	91:13 124:11	cuts 133:5	demonstrations	
3:25 4:2 9:4	Court 128:18	cutting 82:11	20:11 22:13,18	
correct 56:10 97:16	138:22	cycle 16:16	24:22 25:19	
correction 56:8	courts 128:19	cycles 130:8	Dennison 128:14	
cost 18:2,17 20:5	Court's 137:6	C-O-N-T-E-N-T-S	Department 2:18	
28:3 70:13 75:20	cover 129:6	5:1	2:20 3:2,4,13,23	
85:1 87:22 91:22	Co2 13:18 14:6,6	<hr/> D	9:18 12:16 16:1	
92:11 103:16,18	15:7,7 16:4,11,20	Dakota 4:15 9:5	26:4 30:12 61:15	
117:2 119:13	17:20 18:5,12,15	21:18	87:9 128:11,13	
123:18	21:7 22:3,7 25:15	Dalton 2:11 36:14	129:15 149:4	
costs 78:10 79:11	25:21 27:4 34:11		depend 64:13	

depending 113:13	dilemma 13:6	Dominion 4:20	123:18	EIA 61:10 78:4,13
deployable 143:21	dilute 66:10	door 27:16,18 87:5	easy 13:10 47:19	78:22 79:1 83:2
deployment 15:21	dilution 84:1	double 93:19 136:8	100:5 116:21	84:17 110:9
21:16 22:16 25:18	dimensions 58:14	doubling 92:22	eat 62:18	eight 21:14 41:7,10
28:19,21	dioxide 13:4 17:6	downstream 97:9	Econergy 92:8	41:12 45:1,9 46:9
deposits 22:8	18:7 41:20 137:7	114:4	economic 36:21	46:22 60:3 63:11
deputy 147:16	137:13 139:5	downturn 110:1	58:14 59:8 96:3	89:2 135:14 145:1
design 29:1 118:10	direct 30:6 115:1	121:3	101:4 104:21	145:17
Designated 7:3	148:16	Dr 53:15 66:7,19	108:19 109:2,22	EILEEN 3:13
destruction 111:2	direction 103:19	70:8 72:7 73:12	114:5 118:2 121:3	Eimer 1:14 31:6,6
details 114:2	121:13	79:11 89:14,20	125:14	52:4,6 95:9 127:15
determine 125:12	directions 28:18	90:5,17 91:11	Economics 53:4	either 28:5 80:13
determined 15:5	97:5,5,6	92:15 93:20 94:1	59:6 87:9	103:17 109:14
149:14	directly 117:1	draft 38:20	economies 14:19	111:1 113:9
develop 16:2 23:12	director 18:10	drafting 124:13	economy 14:14	119:15 127:9
34:21 43:19 69:15	52:15 95:11 96:6,8	dramatic 32:5	17:22 35:15,15	144:20
developed 13:20	disadvantage	drawn 53:18	59:10 121:12,16	Elect 131:7 137:17
107:8	108:19	drill 98:18,19	132:10 141:3	elected 49:10
developing 23:1,12	disciple 60:14	drilling 98:9	ECUST 107:8	election 5:17 10:14
68:10 107:4 113:1	discuss 51:20	drive 28:16 32:16	Edison 3:6	92:12 130:1,8
development 2:24	discussed 39:12	drop 48:7 104:9	edited 53:22	132:8,9 134:3
13:9,16 15:10,21	discussing 54:17	drugs 54:14	educate 40:7 123:20	elections 129:6
18:14 20:4 26:11	55:16	due 28:3,4 73:19	145:20,21,21	131:9
27:7,10,14 28:10	discussion 38:19	dues 50:15 51:2	educated 62:20	Electoral 131:6
28:13,20 35:5,15	131:17	Duke 26:16	educating 35:17	electric 3:4,6 59:11
36:6 96:3 140:8	discussions 49:22	duly 149:2	education 35:6 66:1	84:20,21
142:13 143:15	Distinguished 59:5	dumb 60:19 74:11	66:4 84:2 133:8,8	electricity 13:3
developments 13:13	distribution 65:3	Dummies 48:5	147:8	57:21 58:3 62:13
13:15 14:4 103:21	103:22	dung 68:17	educational 84:10	62:15,20 63:14,21
dialogue 36:22 37:3	District 128:17	DURHAM 2:13	148:4	64:2,4,7,9,14,15
Dick 1:18 33:1,2	divergence 60:12	dwell 102:18	Educator 3:22	68:16 74:21 83:22
124:21,22	diversity 126:6	DWYER 2:14	Edwards 106:8	84:6 85:2 87:17
die 62:17	DIXON 2:12,13	dying 92:9	effect 32:3 46:19	90:16 91:9 93:18
difference 62:21	documentable	Dynegy 1:14 31:7	effecting 11:4	111:3,22 136:20
63:1 68:2	15:15	D.C 122:16	effective 20:2,5	140:22 141:3
different 11:3 22:21	documentation	E	23:14	142:1
23:18 34:3 35:2,2	77:21	earlier 12:9 24:12	efficiencies 16:9	electrification
35:3 37:14 55:3,15	DOE 5:5 23:10	114:21 119:21	17:3 26:1	28:17 63:6
59:21 60:3 69:6	86:15	130:10 147:15	efficiency 9:21 16:6	electronically
74:7 117:8 134:12	doing 41:11 74:20	early 26:6 97:3,17	16:10,13,19,22	127:10
differential 87:2	95:1 101:7 110:19	119:22 140:3	17:8,18,20 25:14	element 115:6
104:16 110:21	124:18 148:7	easier 31:18 131:4	42:8,12	elementary 76:1
115:15	dollar 68:7	East 66:22 71:7,10	efficient 17:10	elevate 18:4
differently 43:4	dollars 19:5 115:15	71:17 104:3,6,10	135:13 138:18	Elm 4:9
difficult 40:21 41:2	dollar-a-day 68:6	107:6	141:4	email 33:5 45:12
129:22 131:16	domestic 13:1 44:5	Eastern 1:16	efficiently 12:7	48:16 56:9 122:5
144:16 145:11	55:12 98:8 107:14	Eastman 115:11,21	effort 32:12 127:13	127:6 148:15
digest 43:16	128:2		efforts 52:11 129:14	embarked 28:16

embrace 33:12 109:8	142:18 143:5,9 147:17 149:5,15	29:8 32:4 52:19 108:14 145:11	122:11,22 124:20 127:2,17 128:7	facing 54:12 75:10 fact 12:8 14:16 60:9 62:14 77:2 79:3 81:17 84:1 91:20 92:17 112:19 113:1 123:21 124:6 129:17 131:2,21 135:18 135:19 142:20
emergency 95:18	EnergyPlus 2:18	Esquire 1:22	134:14 146:10,17	
emissions 13:4 14:10,18,22 15:18 15:19 16:5,21 18:3 18:13 21:9 27:15 119:20 121:19 138:13	energy's 16:1 54:18	essential 32:10	147:2 149:21	
emphasize 62:4	engage 36:9	establish 23:3	150:3,5	
empirical 34:22 62:14	engaged 36:11	estimated 17:17	existing 17:19 20:1	facto 130:16
enable 17:5	engagement 35:6	estimates 87:17,20	40:12 42:10,12	factor 19:7 87:11
enabling 108:4	engineering 2:17 118:9 121:9	et 42:18	137:14,22 138:16	91:17 109:1
encompass 20:15	enhanced 21:22 34:11 61:4 113:14 114:7	ethanol 22:8 99:10	expand 29:6 58:7	factors 108:7
encourage 51:2	enjoy 27:18	EU 15:2	expanded 56:5	facts 11:7,9 49:1
encouragement 140:8	enjoyed 38:3	Europe 77:11,18 91:13	expanding 141:2	faculty 52:15 66:8
ended 24:4 41:7	ensuing 130:8	events 13:12 14:3 132:3	expectations 132:1	fairly 114:8 118:22 125:16
enemy 62:11	ensure 125:14	eventually 22:9 54:16	expected 25:20 60:13	fall 104:20 123:13 132:12 141:11,13
energy 1:13,15 2:6 2:14,20,25 3:4,8 3:11,13,19,23 5:10 6:14 8:21 9:14,17 9:19 10:5,22 11:22 12:13,15 13:1 15:11 16:2,7 18:4 18:9,11,16 19:14 20:22 24:10 26:17 27:17 29:14 30:3 35:14 37:1 41:14 41:16 42:5,18 43:13 44:13 52:13 52:18 54:17,22 55:8,10,21 56:21 58:14 59:5,11,19 61:15 62:5,5,7 65:7 67:10,16,22 71:17 79:15 83:3 85:8 95:18,22 96:1 98:4,9,13 100:21 101:6 110:11 111:3,12 112:19 120:14 125:15 126:3,19 133:7 136:5,14,16,19 140:13,20,21 141:14,16,21	Evergreen 3:13	experience 28:22 63:10 95:22 103:9 128:5	falling 73:20	
	everybody 10:12 23:19 49:9 54:6 61:16 64:16 70:3	expert 73:6	false 143:19	
	enterprises 21:1	expertise 24:5	familiar 24:6 105:7	
	entities 20:22 23:18	experts 24:9,16	families 52:19	
	entree 109:13	explain 34:7	family 136:2 141:5	
	Entrenched 86:7	explained 14:8	far 32:12 34:8 74:13 78:9 108:2 110:16 118:8	
	environment 85:18 97:14 102:6,7 110:8	explaining 148:18	farm 53:4 63:8	
	environmental 2:9 2:13 15:4 23:11 52:16 66:16 105:13 108:12	explore 29:5	farther 106:10 108:18	
	environmentalists 113:7	export 71:13	far-removed 100:17	
	envy 142:3	exporting 71:14,19	fashioned 11:9	
	EOR 113:16	exports 73:16 76:9	fat 83:12	
	EPA 117:10,13 137:10	extended 129:17	fault 79:20	
	EPRI 2:11 3:12 4:7 41:18,19 120:4	extensive 9:19 26:3	favor 8:8 50:10 51:15	
	equal 22:22 28:8	extract 114:3	Fay 2:14,14	
	equally 122:2	extracting 105:8 113:18	feat 62:16	
	equation 78:21	extraordinary 10:20 11:1	feathers 100:19	
	equipment 128:1	extrapolate 90:11	features 20:20	
	equivalent 14:6 15:7	extremely 40:9 46:15	federal 7:3,8 15:6 31:9 37:20 128:19 143:14	
	era 27:16,19	exuberant 82:12		
	ERIC 1:19	eye 116:4		
	especially 13:17		<hr/> F	
		face 55:9 74:21 111:11		
		faced 11:8 50:19		
		faces 145:16,17,18 145:19 146:5		
		feeling 118:1		

feelings 55:7	144:4 145:8	formal 23:1 78:13	FRASER 2:18	GAO 46:17
FELDMAN 2:15	FirstEnergy 3:3	formed 147:10	FRED 3:21	gap 84:10 110:20
fellow 53:11 98:21	fiscal 132:20	former 52:15	freewheeling 92:9	Garden 14:9
147:13	Fischer 2:17 104:8	147:16	frequently 29:5	gas 5:14 9:18 10:1
female 93:12	112:1	formerly 131:10	freshmen 146:5	18:3 22:9 34:2,10
Fenton 2:15 122:9	Fischer-Tropes	formidable 96:18	FRIDAY 1:5	42:3 44:6 46:18
fertilizer 110:4	100:7 113:9	forth 18:1 53:19	friends 147:12	64:20 65:10 73:8
fertilizers 97:10	fit 44:1 111:7	59:12 61:16 78:10	front 45:2 89:2	74:18 75:1,4,6,21
106:21 109:15	fits 42:17 43:3	Fortnightly 53:1	141:14	76:10,12 77:11
111:14	five 12:11 14:21	fortunate 6:10	fronts 65:7	78:7,14,18 79:6
field 21:12 23:20	46:13 57:22 62:17	Fortunately 32:16	front-end 118:9	80:4,18,22 81:2,6
99:20	72:9 77:1 87:1	Forty-two 65:1	fuel 3:12 11:19	81:15 82:6,8,15,18
fields 100:4,18	fives 72:11	Forum 29:14 37:7	fuels 1:13 15:11	82:22 83:5 84:18
fifth 42:6	flat 110:18	forward 11:15	83:14 96:7,8 97:10	85:5 88:13 92:12
figure 32:10 48:6,9	flavor 117:21	25:10 27:15 28:6	112:1,11,12 113:6	93:18 94:5,9 97:7
137:19	flexibility 134:14	32:13,15,19 37:12	113:6,11 116:18	97:13 101:19,22
figured 106:13,14	138:16 139:3	38:4,5 55:17 81:15	116:19	102:6 104:8,8
filibuster-proof	flexible 138:8	104:12 105:12	full 1:3,8 7:6,15	106:17 109:6,11
130:15,16	flip 32:14	116:8 118:6	44:22 47:11 51:12	109:12,21 110:2,6
fill 122:17	Florida 129:18	141:12 143:9	120:2 142:12	110:16 111:1,5,11
filled 123:1	131:12	146:3,22	144:1 149:12	112:12,14,16
final 26:8	flowed 99:4	fossil 6:14 9:14,16	fuller 137:1	117:2 126:15
finalized 47:7	fluids 34:15	10:5 16:2 18:16	function 48:4,12	gases 137:7,14
finally 13:19 46:7	flyers 147:18	147:17	functions 49:2	139:6
88:5 112:10	focus 42:7 43:11	foster 25:18	funded 53:5	gasification 2:5
finance 5:9 49:15	62:3 84:11 95:18	found 24:13,16	funding 26:4 133:8	6:19 16:15 42:20
49:16,20 50:1,4	96:20 97:1 134:22	25:11	139:17 140:7	42:22 95:11,19
51:8 120:10	135:2	foundation 2:15	143:13,15	96:20,22 97:9,12
financial 32:7 50:17	focused 58:13 69:19	3:17 4:19 11:11,19	fungible 112:16	97:16,18,22 98:12
50:18 51:5 58:5	focuses 42:14	22:17 53:6,7,8	116:21	100:8 101:12,13
81:7 118:4,11	ocusing 42:4 142:6	64:8 90:22 141:10	further 15:4 20:4	102:3,4,10 103:2
119:15 132:11,19	folks 36:13 38:15	foundational 30:2	future 11:12 22:17	104:12 105:5
133:10	117:15 124:9	four 20:16 22:1	42:18 46:21 51:6	106:21 107:4,9,15
find 11:14 12:5 81:4	127:8 134:1	39:17 40:18 43:15	78:1,15 80:8 95:5	108:3 109:14
114:16	148:12,17	46:13 63:12	98:6,14 99:16	110:7 111:10
finding 137:12	following 6:15 26:3	110:21 147:21	100:21 101:5	112:6 113:21,22
findings 16:8	52:4 97:8	fourth 41:22 119:17	103:15 105:9	114:9,12,15 115:2
FINKENBINDER	food 68:4	frame 104:17	107:21 118:20	115:3,5,8,19,21
2:16	football 105:20	framework 58:11	133:2 145:12	116:2 118:14
fire 83:12 120:14	forces 36:17	France 15:1	146:1 148:4	119:11,14 120:1
-fired 42:11	Ford 53:7	Frank 2:4,8 5:10	FutureGen 25:7,8	121:2 122:14
firm 95:15	forecasts 133:14	6:17 41:13 42:2,16	25:17,19	123:16
first 13:12 16:6	145:7	52:9 53:12 56:4	<hr/> G <hr/>	gasification-based
19:12 31:14 33:19	forefront 129:9	88:20,22 94:18	G 1:10	111:7 116:7,17
41:13 83:11 98:2,3	132:13	95:2,5,6 96:19	Gabbard 2:18 8:21	118:5
115:19 122:13	foresees 15:19	97:4 101:18	game 77:22	gasifiers 102:17
126:1 130:2,2	Forest 128:15	106:15 108:1,7	gaming 124:12	113:2
132:21 141:18	forget 60:22	frankly 12:4	gasify 100:14 104:7	

gasifying 103:10 111:19	79:7 96:19 97:2 98:15 101:11	81:14,15,18 82:7 82:10,14,19,20	GPS 119:1	Guest 2:6,8 3:20
GASKY 2:19	133:13 137:18	83:2,3,6,16 86:11	graduate 52:15 128:14	guests 6:11 7:11,13
gasoline 100:8,9 112:2 113:10	148:14	86:11 87:21 88:7	graduating 54:10	GUHA 2:21
gasses 14:7 15:8	given 12:2 21:1 38:9 50:21 53:20 92:11	92:14 93:6,14 94:7 94:17 95:1 99:10	Grand 1:9	guy 71:11 81:17
gas-dependent 110:3	97:4,5,5,8 104:20 110:14,16 118:2 121:16	99:12,21 100:3,4,6 100:9,10,21 101:3 101:7 102:20,22	grasp 32:8	86:15 87:8 91:12
GE 106:1 107:14	gives 55:18 77:20	103:21 104:12	GRASSER 2:20	guys 88:3
geared 36:18	giving 126:13	105:12 106:5,7,8	grateful 10:9	G8 16:8 17:22 24:20 27:20
gegatons 21:5,7	glad 37:22 51:20	106:18,19,20	great 35:10 61:6 87:3,6,6 88:8 92:2 145:9	H
GELLICI 2:19	75:13 88:4 93:16	107:12,20 109:10	greatly 30:12 38:7	Hal 3:19 6:21 127:17 146:11,15
gen 118:20	129:20	109:10,12,17,18	green 136:16 140:10	half 64:14 83:11 89:12
general 2:21 33:10	glimpse 99:15	109:22 110:6,18	greenhouse 14:6,17 18:3 29:16 137:7 137:14 139:6	Hall 2:22,22,22 4:17
generally 104:4	global 4:3 13:1 37:18 41:14 55:11 57:12 58:22	111:1,10 112:7 116:18,22 117:11 117:16 118:3,10 119:1 121:15	Greenspan 76:22	hammer 137:21
generating 3:24 20:7 28:19	globally 13:21	124:2,12 125:2,22 126:7,16 132:8	GREG 4:20	hand 30:21
generation 3:7 4:8 9:22 11:8,20 13:3 15:13 16:5,6,16,17 17:4 22:10 54:19 88:7 103:16 108:6 109:5,9,19 119:5 123:15 144:1,19	go 12:2 28:2,2 38:5 40:3 43:20 63:5 65:6,9 71:1 72:12 74:7 76:18 77:18 81:3 91:6 94:5 98:13 109:22	133:3,14 134:2 136:17 139:11 140:3 141:12 143:4 144:16	group 4:11 10:19 62:22 77:9 89:1 93:13 147:8,14 148:18	handful 118:7
generic 33:17	113:9,17 114:1,21	Gold 145:1	grouping 14:21	hands 47:9
generous 94:19	116:8,9 117:17	good 6:3 9:3 23:16	groups 21:3 43:9 55:15	Hansen 62:10
gentlemen 6:4 30:17	118:5 125:9,11	28:12 30:17 38:22 46:20 56:6 58:11	growing 104:2 111:10 113:4 141:2	happen 44:19 61:7 68:15 72:14,15,16 74:9 80:7,21 83:2 83:4 85:3,4 109:17 121:15
Geographical 103:22	136:22 138:5	46:2,5,6 64:18 65:2 66:4 75:5 76:8	grown 19:9	happened 46:2 56:12 74:16 80:6
geologic 34:9	goal 14:5 42:4	86:13 87:13 91:1	growth 14:6,10 15:18 78:1 97:11	happening 71:9 73:1 101:21 110:16
geological 20:20 21:2,6	goals 55:2,3	93:9 96:17 104:11	101:4,17 102:15 102:18,20 104:5 104:13,15 105:1	happens 11:5 82:17 92:12
geologies 22:21	god 79:5,8	93:14 122:16	Gruenspecht 79:4	happy 9:10 50:13 82:13 91:2 117:15 122:8 148:17 150:9
George 96:13 147:13,14,15 148:3,16	goes 35:17 125:7	124:16 125:16,17 125:22 129:2	GTL 104:6	hard 54:8
getting 34:17 78:14 81:22 84:13 99:22 112:10 115:14	going 12:2 32:10,11	146:19,21	Harold 5:17 127:16	
gigantic 44:9 54:6 65:17 75:19	34:7 35:3,5,7,19 39:22 41:6,16 45:14 47:15 48:10	goods 126:10 128:2	HARRISON 2:23	
gigatons 15:7 16:20	49:10 52:4 54:20 54:21 55:8 58:21	Gore 69:1 99:7 131:8	Hartwell 36:15 37:11,22	
Gingrich 98:20 99:18	59:16 61:7 63:15	gotten 75:2 79:2	hate 73:9 113:7 118:19	
give 33:20 39:10 49:16,21 54:2 55:7 57:17 59:1 70:14	63:19 64:17 67:2 67:15,15,20 68:22	govern 7:9	head 146:13	
	69:10 70:13 71:3,4	government 29:19 32:1 128:8 129:13	headed 97:7 103:8 110:2 114:12	
	71:14,17 72:14,17	143:14	heading 75:18	
	73:3 74:3,10,17,21	governments 15:6 15:12 37:14	heads 93:12	
	75:1,5,20 76:15,17	governor 69:10 guesses 74:15 guessing 80:17		
	78:2,5,8,13 79:16			
	79:21 80:2,7,21			

headway 140:11	Holliden 39:2	identification 58:12	improving 17:13	115:20 119:11,14
health 133:6	Hollinden 2:25	identified 21:5	19:22	123:16 127:21
hear 67:7,7	38:21 39:4,7	identify 31:2 32:20	incentives 58:5,7	industries 3:19 4:11
heard 61:14 89:18	HOLLY 3:2	idiot 84:17	61:8 119:11,15,16	110:3,5
hearing 133:14	Holt 4:8	idle 133:17	119:16,20 123:14	industry 10:22
150:17	homes 110:5	IEA 17:7 27:20	15:8 16:8	18:18 26:4 29:8,12
heart 108:2	Honorable 2:8 6:14	68:11 70:2,6,19	17:8 19:2 23:6	29:18 30:7 34:2,10
heat 86:17,22	10:7	iffy 80:19	108:16	91:19 101:12
heavy 100:5,9	Hoover 65:13	IGCC 16:16 26:18	includes 9:17,19	102:16 103:4,5
111:21	hope 77:10 100:19	27:8 103:3,15,20	118:19	107:1 109:8 110:4
heed 143:8	106:9	103:20 108:10,16	including 13:4	110:5 114:14
height 73:12	hopefully 9:1 43:15	108:18,21,22	18:20 48:2 52:21	118:22 121:2
held 7:7 68:10	hopes 55:2,3	112:15 115:19	96:1	123:5 127:20
95:12 122:15	Hopf 2:25 49:15,18	116:14 117:4	increase 16:6 29:12	128:3 135:3,6
123:4	49:19 50:12 51:17	118:19 144:5	34:19 71:5 77:14	136:1 146:1
hell 65:7 94:7	hoping 90:18	IGCCC 17:4	85:1,2 109:11	inescapable 12:5
help 44:13 120:21	102:14	Illinois 2:23 88:15	increased 17:8 98:8	influence 28:11
helped 68:12	Hopkins 3:2 66:13	112:20 113:1	109:19	influences 28:12
helpful 91:12	horizon 31:9 68:14	imagine 139:4	increases 16:13	information 5:8
helps 91:14	69:2	immigration 133:7	17:20 19:10 44:9	29:4,6 34:17 37:4
hesitate 56:8	Hotel 1:9	impact 5:18 52:18	44:10 78:3 98:13	37:9 40:13,16
hey 56:4	hour 27:4 89:12	92:18 93:11 110:6	109:12 110:13	47:16 80:15 122:7
he'll 132:3	House 96:2 130:19	impacts 32:5 93:1	increasing 16:18	148:14
Hi 31:6 33:4	131:1 134:18	impediments	50:15	infrastructure
high 9:21 28:2 42:8	145:19	134:17	increasingly 44:15	142:2
60:18 76:22 90:2	households 93:13	implementation	increment 15:15	initiate 48:11
97:13 102:5,6	Houston 114:20	13:9	incremental 71:16	initiated 135:11
103:18 123:22	Howard 79:4	import 77:11,13	72:10 78:1	Initiative 25:6
136:2	Hub 80:9,14	importance 19:11	independence 42:5	inject 105:6
higher 15:9 16:9	huge 64:22 75:19	22:22 28:9	80:9,14 133:7	injected 22:6 34:15
17:3 74:21 75:1	85:16 107:1	important 7:17	136:15 143:9	injecting 34:11,13
77:4 101:22	humiliation 73:13	16:18 18:12 26:13	independent 24:1,8	injection 22:7 23:7
103:16	hundreds 68:9	34:7 35:6,12 37:17	India 64:19 68:15	34:1,3 117:13
highest 132:1	Hunton 1:25 3:10	40:9 44:17 45:17	Indiana 4:21 9:7	injections 21:14,22
highlight 26:16	4:2	46:15 84:4 98:4	26:22 27:3 131:13	input 26:3
105:11	hurdle 123:22	100:20 101:14	Indianapolis 92:20	inroads 93:5
high-paying 141:5	hurry 58:18	103:20 104:2	indicated 137:17	insightful 12:12
Hill 3:17 33:7 91:6	hut 63:18	117:12 120:11,19	139:9	90:6
historic 130:1	huts 68:18	129:9 135:6,21	indication 49:6	insights 12:17
historically 103:6	hydrogen 111:20	136:5 141:11,20	indirect 113:11	insignificant 61:3
history 34:12 120:5	112:9	144:2,5	indispensability	instance 126:8
hit 103:2	hypothesize 74:14	111:12	145:22	133:4
hoax 98:17		imports 73:16	indispensable 18:8	Institute 3:6,9 99:4
Hoback 2:23 112:19	I	108:18	141:20	99:20
Hokkaido 17:21	idea 23:22 59:1	imposed 15:12	individual 148:10	institution 71:1
hold 131:7 149:12	70:14	impossible 72:16	149:5	institutional 70:22
holds 53:9	ideas 13:19 46:8	impressive 123:2	industrial 2:6 57:1	85:15 86:2
hole 63:15 88:6	58:20	Improve 42:11	57:3 113:22	institutions 133:10

insurance 119:21 int 114:12 140:11 Integrated 16:15 intellectual 107:17 intellectually 126:21 intended 22:16 111:6 intensity 14:13 intent 40:11 interest 13:14 21:3 42:22 94:16 120:9 interested 30:7 48:1 interesting 70:13 91:22 148:22 interests 26:16 127:4 128:6 interface 150:1 Interior 3:2 128:12 international 13:12 14:3 16:7 18:11 24:2,10 29:14,16 36:8,9 142:18 internationally 24:18,21 interruption 126:8 Interstate 138:7,10 introduce 9:12 49:14 52:3,4,8 107:18 115:18 117:6 129:11 introduced 52:7 Introducing 52:6 invest 125:20 invested 19:4 investment 19:7 28:3 136:2 invitation 129:3 invite 49:16 122:6 involved 23:18,21 24:1 34:2 37:1 45:7 58:17 97:19 97:20 involvement 143:13 involving 21:20 Iran 88:11 irony 99:7 irreconcilable	142:9,11 irritation 79:3 ISO 2:15 issue 5:8 31:15 35:20 40:5 41:13 46:16 73:8 85:6 94:22 98:17 107:22 120:3 126:3 issued 26:4 69:21 issues 10:5 31:11,17 31:19,22 32:2,7,16 32:21 35:16 37:2,3 40:14 41:17,21 81:16 95:17 96:1 105:13 119:21,22 120:8,10,11 129:8 136:4,12 138:19 140:3 143:9 147:21 item 99:13 112:10 119:17,17 It'll 140:5 i.e 112:11	142:16 144:20 Jimmy 130:3 job 10:18 47:20 101:18 140:10 146:20 148:18 jobs 11:1 28:15 59:11 136:3,16 141:5 Joe 2:25 4:2 49:15 49:19 60:14 John 2:14,17,20 3:6 3:8,12,12 36:15 41:19 131:8 Johns 66:13 join 10:6,11,17 joined 7:12 75:17 jointly 115:10 JON 4:19 JONES 3:3 JOSIE 2:19 Journal 53:4 73:9 99:14 Journalists 65:18 journals 73:14 Joy 4:3 judgment 116:6 Judicial 128:7 July 20:3 jump 144:13 June 26:5 39:17 justification 69:15 juxtaposed 99:18	121:1 139:20 147:14 keynote 98:22 kick 56:11 kid 147:6 kids 54:8 60:20 73:13 84:12 kilowatt 27:4 kind 29:4 31:21,22 32:15,17,21 33:11 33:20 34:3 35:4,6 42:19 43:20,21 54:16,22 56:1 60:12,17 61:8,20 73:4,18 75:12 76:16 77:3,17 147:6 148:7 kinds 32:5 56:3 59:10 63:7 73:1 93:1 123:4 Kingdom 15:1 KINSMAN 3:6 KLAUS 3:6 knew 80:10 know 11:21 12:7 18:17 26:21 29:18 31:16 32:2,8 33:10 33:16,18,19 34:9 34:16 37:20 38:6 39:9 40:10,22 41:5 43:11 44:6 46:8,16 47:5,11 48:8 54:11 55:20 59:15 61:12 62:9,13 64:7 66:9 67:12 71:12 73:3 74:15,19 75:8,12 76:12 80:7,16,17 81:17,19 84:3,5,12 85:11 88:1,2 94:2 116:13 121:11,22 124:8,11,12 126:10,15,18 127:4 132:8 136:11,12,14,16 138:2 139:19 140:16,18 146:20 148:11 knows 16:3 54:1	64:16 74:17 75:22 78:21,22 79:1 80:20 82:7 Kudlow 70:5 Kyoto 17:1
				L
				labor 3:13 121:9 128:13 Laboratory 19:15 lack 28:4 ladies 6:4 30:17 laid 58:10 LAMBECK 3:6 land 20:17 71:12 landmark 26:18 languish 28:2 large 20:10 21:14 22:15 84:8 112:7 134:2 largely 136:15 larger 16:22 116:20 137:1 largest 15:15 102:19,20 Larry 2:21 53:16 70:5 laser-like 97:1 late 48:9 lately 44:11 latest 12:19 laughing 119:8 LAUGHTER 66:6 66:18 70:7 72:6 73:11 79:10 89:5 89:13,19 105:18 122:10 135:16 145:13 laureates 24:12 law 128:15 134:16 lawyer 56:11 lay 22:16 139:6 layman 41:1 layperson 40:20 lead 146:22 leader 39:3 leaders 10:22 leadership 29:14

37:6 150:7 leading 9:16 leads 120:21 129:13 learned 29:2 lease 81:18 leave 97:3 120:16 lecture 55:17 84:13 89:21 led 36:22 left 84:19 147:18 leg 105:3 legally 139:2 legislation 124:13 138:13 legislative 128:7 134:10,21 legislators 67:5 legislatures 74:8 legs 28:8 length 28:9 Lessons 29:1 let's 14:2 19:12 102:18 104:13 107:22 110:9 125:6,6,18 level 56:17 58:22 121:18 131:5 levelization 61:21 levels 35:3 125:21 126:1 130:2 levers 134:19 liability 31:11,15 32:2,6 119:20 licensed 106:3 life 11:4 54:22 lifetime 132:2 light 94:22 lights 63:20 Lignite 2:14 limb 77:14 limited 134:15,16 line 107:11 109:4 LINEBARGER 3:7 lines 9:18 60:20 92:1 144:21 lining 121:7,11 linkage 137:11 linked 21:21 136:6	137:8 linking 27:6 lip 60:5 liquefaction 79:12 liquids 5:14 42:2 44:11 100:8 104:9 115:20 125:3,5,19 127:1 list 54:8 108:7 119:7 listed 102:21 listen 81:3 literally 104:7 literature 59:18 63:6 76:19 81:1 litter 66:17 little 26:22 33:20 39:10 40:21 41:1 43:3 63:17 66:21 68:18 85:11,22 89:1 104:3,14,22 106:10 109:9 110:10 111:18 129:6 147:10 live 54:22 55:1 62:19 68:6 lives 63:3,3,8 68:8 LLC 1:18,20 2:10 2:17,25 3:25 4:6 4:12 LLP 4:13 LNG 76:9 78:15 79:16,20,21,21 loans 78:10 lobbyist 91:5 located 113:14 114:10 location 149:14 logic 99:5 109:16 long 3:8 18:10 86:8 88:17 89:11,15 105:3 121:3 135:20 143:2 longer 62:19 long-term 23:5 110:2 look 14:11 19:12 26:13 33:18 38:4 45:1,9 46:4,17	50:8 70:9 72:12 87:21 116:4 146:3 147:19 148:2 150:3 looked 43:22 49:9 59:17 87:6 looking 11:15 19:22 34:18 55:17 76:4 112:1 119:7 looks 74:9 87:13 138:22 loom 134:2 looms 137:3 looping 19:21 lopsided 106:12 lost 81:13 lot 32:11 33:18 34:12,14 38:22 39:8,22 42:21 43:1 43:5 55:6,20 58:16 62:3 65:7 67:4,12 71:15 77:6 78:6,6 78:10,14 79:11 80:4 82:5,14,15 83:5 85:18 92:11 100:15 101:12,14 101:15 103:9 105:12 117:7,8 120:7 124:10,12 126:4,5 133:15,16 133:19 lots 86:6 love 127:9 low 18:2 106:1 117:2 143:4 lower 98:9,12 101:5 101:6 102:9 104:22 119:13 134:18 lowered 126:15 lowering 76:9 luck 146:19,21 Luke 129:14 Luminant 3:9 Luxottica 3:10 <hr/> M <hr/> M 1:9 42:7	magic 130:14 MAGRUDER-L... 3:8 maintain 135:22 major 14:19 16:10 17:22 24:21 57:10 115:2,3 majority 50:14 130:4 makers 91:7 143:8 making 43:5 145:10 MALCOLM 4:5 mandate 131:16,18 131:19 134:7 mankind 62:11 manner 38:5 51:3 MANOJ 2:21 manual 5:8 47:16 48:3 manufacturers 128:1 manufacturing 114:1 118:15 map 111:15 116:1 116:16 118:21 margin 130:15,17 margins 133:22 134:12 MARILYN 1:21 Marine 64:4 MARK 3:10 marker 137:18 market 26:14,14 28:5,12 81:13 95:17 97:6 103:8 103:14 107:19 110:8 113:5 114:12 125:21 126:1 140:20 marketplace 30:1 markets 5:10 28:10 28:11 97:11 100:12,17 103:19 108:5 MARTY 2:22 MARY 3:13,22 mass 20:17 Master's 96:12
--	---	--	--

98:11 117:12 118:2 120:6 124:3 129:10,16 146:12 membership 20:20 50:14 member's 115:2 membrane 19:20 memory 70:22 MENEZES 3:10 mention 47:15 73:9 109:7 117:9 141:17 mentioned 23:17 37:6,11 39:6 111:13 112:14 mercury 138:21 merely 141:19 message 97:2 141:12 145:4 met 39:18 79:4 110:22 114:20 metal 127:21 methanol 100:9 112:2 113:10 metric 22:5 25:21 115:16 Mexico 61:1 73:7 Michael 1:10 2:10 8:20 144:22 Michigan 72:1 microphone 7:18 30:22 middle 71:10,17 104:3,6,10 133:5 MIDGEN-OSTR... 3:14 midnight 135:7 Midwest 2:15 4:8 112:21 mid-course 56:7 mid-ranked 17:11 mightily 52:10 Mike 1:13 2:4,12,13 3:9 6:4 10:9 35:22 36:1 47:17 49:19 150:6 milage 15:9 Miller 3:10 147:3	million 17:20 19:4,5 19:6,9 20:3 22:3,5 25:12,21 60:21 68:16 77:15 79:7 87:19 millions 68:9 mind 89:4 131:21 132:14 134:3 minds 129:9 mine 33:21 73:10 100:15 114:14 140:20 mined 108:15 mineral 127:22,22 Mines 4:15 9:6 mining 2:16 3:18,19 6:21 105:14 127:18,19,20 128:2 135:2 mining's 128:6 minorities 52:19 minority 93:3,7,11 minute 111:15 135:8,19 minutes 7:15 90:1 MISI 1:23 misleading 104:4 misrepresenting 120:19 mission 51:7 mistake 75:19 MIT 1:21 115:10 123:17 mitigate 18:5 mitigating 30:2 mitigation 15:15 19:3 MKT 2:10 8:20 36:1 model 71:13 modeling 34:20 models 34:22 moderate 16:4 130:18 134:4 modify 92:14 moldable 21:12 moment 142:6 Monday 117:17	money 61:19 69:22 73:22 75:15 79:12 82:16 monitored 22:6 monitoring 19:2 23:7 month 99:1 112:5 122:15 months 39:17 56:18 69:11 137:19 moratorium 110:14 40:12 48:2 53:6 58:9 59:22 83:3 94:19 96:6 98:4 106:15 119:18 121:14 127:18,19 127:19 128:9 135:2 move 27:18,19 28:5 32:13,21 38:18 50:8 51:13 61:4 103:14 143:8 Moved 8:3 movement 101:21 108:11 112:13 moving 27:15 28:17 32:15,19 37:12 69:14 103:19 119:5 120:12 MOYA 3:18 Mueller 1:10,13 6:3 6:4 8:4,7,10 9:3 38:17 49:13 52:2 148:20 149:11 150:11,14 multilateral 36:11 multi-pollutant 138:12 mustard 139:2 <hr/> N <hr/> name 6:4 7:19 39:7	49:19 107:8 119:7 named 147:13 narrow 98:5 NASA 62:10 nation 1:24 4:6 17:22 30:13 146:2 national 1:1,14,18 2:16 3:18,19 6:5,8 6:21 15:3 17:17 19:14 30:8,18 moratorium 110:14 40:12 48:2 53:6 58:9 59:22 83:3 94:19 96:6 98:4 106:15 119:18 121:14 127:18,19 127:19 128:9 135:2 move 27:18,19 28:5 32:13,21 38:18 50:8 51:13 61:4 103:14 143:8 Moved 8:3 movement 101:21 108:11 112:13 moving 27:15 28:17 32:15,19 37:12 69:14 103:19 119:5 120:12 MOYA 3:18 Mueller 1:10,13 6:3 6:4 8:4,7,10 9:3 38:17 49:13 52:2 148:20 149:11 150:11,14 multilateral 36:11 multi-pollutant 138:12 mustard 139:2 <hr/> N <hr/> name 6:4 7:19 39:7	58:4,7 64:6 88:2 90:15 111:20 112:8,17 118:3,11 119:10 120:13 131:21 138:4 139:20 140:1 141:2 143:7,8,12 143:18 144:10 146:13 needing 78:6 141:1 needs 11:22 12:15 13:1 56:5 90:13 91:9 118:13 119:2 132:7 136:1 NEIL 1:19 neither 77:7 NEMETH 3:11 NERC 75:11,14 nervous 81:22 nervousness 86:1 net 14:17 Nevada 131:12 never 62:2 86:4 nevertheless 78:12 new 3:15 8:12,14 11:5,13 14:5 17:14 19:18 20:2 27:16 38:19 39:14 40:7 40:13,16 42:7,8 43:6,11,12 46:8,13 47:7,22,22 48:2 49:14 52:3,11 57:1 57:2 59:15,19 68:14 70:11 75:17 80:12 90:12 137:19 140:4 145:15,16,16,17 145:18,19,19 146:5,19 147:6 149:15 newer 104:19 news 72:22 113:4 Newt 98:20 99:18 nice 39:12 54:2 nicely 99:4 niche 111:6 NICK 3:21 night 48:9,9 72:4
---	--	--	---	--

NIH 53:11 Ninety-plus 113:20 NMA 128:9 129:11 129:17 Nobel 24:11 NOEL 3:22 Nolan 129:11 nonpower 103:8 Norfolk 3:25 normal 43:9 normally 43:10 NORMAN 3:5 NORRIS 3:12 north 4:6 20:17 21:18 61:1 76:6 97:7 110:2 128:17 131:13 northeast 87:18 notable 131:11 noted 48:19 132:11 notice 37:20 104:17 Novak 3:12 41:19 NOVEMBER 1:6 NOX 139:3 NRECA 2:10 4:5 nuclear 65:11 85:10 85:12,15,19 86:1,7 86:10,12 number 6:10 36:8 38:22 39:11 44:4 55:14 102:16,17 106:2 108:22 109:1 112:15 113:11 116:11,13 116:15 128:8 129:10,16 132:9 133:2 134:11 135:4 148:22 numbers 61:5 115:10 116:12 numerous 88:22 NW 1:9	objectives 18:19 136:18 obviously 133:9 134:10 occasion 26:21 October 26:6 99:14 120:3 offer 13:19 98:11,12 140:16 offering 145:6 offers 99:15 102:7 113:7 office 2:22,23 3:14 9:16 16:1 18:16 86:16 131:22 Officer 127:17 officers 150:10 offing 92:14 oh 71:3 123:9 Ohio 2:4 3:14,19 131:13 oil 9:17 21:22 34:1 34:10,12 44:5 61:4 64:20 70:11,13,17 71:4 72:2,17,20 73:4,6,8 76:18 88:13 99:16,20,22 100:4,5,10 101:5 102:6 105:3,8,9,13 106:16 111:11 113:14 114:7 125:7 126:9,14 oil's 71:3 okay 38:17 52:2,7 78:20 80:18 101:10 104:13 107:22 115:12 118:8 119:9 150:14 old 26:20 62:17 64:1 68:13 147:11 147:12 omissions 18:6 once 50:5 124:13 ones 43:4 45:16 47:1 86:3 89:8 ongoing 19:1 58:21 open 7:10 149:3	opened 27:16 operated 119:3 operating 97:22 102:17 operation 118:14 122:15 123:3 operational 144:12 operations 29:1 opponents 144:14 opportunities 29:5 59:13 61:6 113:15 145:20 opportunity 7:12 10:10,16,20 26:5 39:8 56:6 88:9 95:4 100:14 113:8 114:8,13 Opposed 8:10 50:12 51:17 opposition 86:5,8 108:9,21 optimistically 130:22 option 103:16,18 order 5:2 organization 49:7 97:16,20 117:7 Orleans 3:15 ORRELL 3:13 Ostrander 42:21 OTTE 3:15 ought 89:1 109:8 124:17 148:5 outcome 109:19 outlining 12:13 Outlook 110:11 outrage 62:12 outreach 34:6 147:8 outside 24:5,7 38:16 63:19 108:5 111:18 outstanding 148:10 overall 56:19 overestimated 87:12 overlay 32:18 overnight 109:17 overpromising 99:6	overseas 63:12 oversees 10:2 overview 5:10 14:2 101:11 owning 97:21 oxygen 19:17 22:14 O'KEEFE 3:13 O-F 5:1	P package 133:1 packages 39:13 PACKER 3:15 packet 45:2 page 79:14 pages 40:18 43:15 panel 24:2,9 paper 41:18 42:10 42:19,20 43:3 66:22 71:8 82:2 91:11 papers 5:8 38:20 39:1 40:6 41:6,13 45:9 52:11 53:18 53:21 54:1 58:10 90:19 92:17 93:15 94:22 147:21 PARA 3:16 parallel 13:20 28:7 parallels 60:4 part 11:1 19:13 20:13 34:11 47:19 51:4 112:2 114:2 134:6 137:1 139:15,20 141:12 PARTICIPANT 8:3,6 participate 29:19 39:20 participation 29:8 29:13 30:6 particular 36:10 120:20 132:12 133:22 134:4 137:4 139:15 140:12 142:10 144:19 particularly 11:16
--	---	---	---	---

57:20 58:16 60:15	71:21	17:19 21:8 27:8,15	117:5,7,18 118:4	85:12,15,19 86:1,7
62:18 64:13 65:15	petroleum 3:8 10:3	42:7,11,13 46:18	118:11 119:18,19	86:10,12 90:9
65:18 67:12 68:9	102:21	65:11 69:12,17	120:9 121:14,17	103:4,16 106:20
68:16 69:16 71:2	phase 21:16,16	71:21,22 75:7	136:1 142:20	108:6 109:5
72:19 74:3,6 76:3	22:16	79:12 85:12 86:12	143:1,8,10	111:19 119:4
76:13,14 77:17	PHELLEPS 3:18	98:1 102:17 106:2	political 96:11	123:15 138:14
79:20 81:2,9 82:12	Phelps 144:22	108:10 114:9,15	PPL 2:18 8:21	
84:3,4 85:7 87:19	Phillips 112:4	116:7,9,15,18	Practical 92:4	
89:2 91:16 93:5	philosopher 145:9	118:5,15 120:12	practice 23:4 32:20	
98:16 99:9,10	philosophy 126:16	138:14 144:5	95:19 96:9 128:16	
101:12 103:3	Ph.D 53:9	plants-based	practices 34:9	
111:2 116:4	pick 130:20 131:1	116:11	pragmatic 136:6	
117:20 118:21	132:3 141:8 148:1	plates 133:2	Prairie 3:24	
120:11 122:18	148:13	Platts 2:9 69:5	preaching 140:17	
124:14	picked 66:16 70:20	72:22	precombustion	
people's 47:9	131:9	play 16:18 88:7,9	17:12 19:16	
percent 14:14,18	Pickens 94:8	108:5 136:9	predecessor 128:9	
20:9 25:13 27:4	picking 130:12	player 115:8	predict 139:11	
65:1,2 72:10 77:5	pick-ups 131:7	players 147:14	predicted 141:1	
78:15 80:12 81:8	picture 55:11 86:7	plays 12:22	predicting 130:22	
85:2 91:17,20	104:11	plead 120:18	predictions 71:2	
105:1 113:20	pie 116:10,11	please 8:15 10:6	78:13 130:21	
116:17 123:16,17	piece 138:13	30:21 31:1 38:13	145:10	
126:1 136:22	pieces 140:5	40:4 53:12 96:14	premise 12:21	
137:1 140:22	pilot 27:11	128:21	premises 56:14	
141:1 144:12,13	Pincock 4:8	pleased 6:12 7:2	preparation 17:12	
percentage 123:19	pipe 107:11	10:11 24:7	prepare 46:12	
124:15	pipeline 80:11,14	pleasure 52:8 88:21	prepared 16:7 42:1	
percent.with 26:2	112:17,21	plus 8:21 132:6	present 10:16 50:22	
perfect 99:21	pipelines 116:22	podium 39:2	76:3	
performance 17:13	Pittsburgh 84:8	point 4:6 75:2 91:15	presentation 38:19	
20:1 144:9	place 57:3 58:5 67:3	98:3 100:20 104:1	55:18 96:20 99:2	
period 57:6 87:1	67:11,17 73:18	124:16 130:22	99:19 127:7	
104:16 105:2	81:7 82:6 93:2	133:20 136:7	presentations 85:19	
108:17	places 63:13 64:18	141:18 142:5	107:5	
periods 34:18	65:4 69:6	144:22	presented 33:13	
permanent 23:5	plan 35:6 132:20	points 67:1 140:15	59:12	
permitting 23:6	149:12	141:17 143:7,11	presenting 76:3	
person 81:12	planned 69:18	Poirier 3:18 8:22	President 14:4	
personal 63:10	115:4 116:17	9:2	15:18 30:16 32:22	
personally 98:10	Planning 96:12	policies 37:7 135:4	35:21 37:19 38:14	
120:13	plans 22:12 27:14	137:2	47:14 49:4 95:14	
perspective 41:15	42:9 114:21	policy 10:4 11:3,10	4:18 9:21 11:7,20	
perspectives 117:9	plant 15:19 16:14	13:9 28:10,11,12	127:17 129:12	
pertinent 20:19	17:13 105:20	31:10,22 48:21	131:6,10 133:11	
Pet 102:22 111:19	112:22 113:14	52:13,16,18 79:15	137:16	
PetCo 100:15	125:19,21 127:1	90:22 91:7 92:10	Presidential 130:2	
petrochemical	plants 17:10,11,14	95:16 97:4 106:15	131:5	
			President's 15:3	

25:5 96:3 132:15 President-Elect 59:19 131:22 139:16	94:1,15 124:17 126:16 127:5 129:21 132:1,22 140:5,11	24:15 25:1,17 26:2 29:16 90:12 136:14	provided 7:13,21 12:17	puzzle 73:2 P-R-O-C-E-E-D- 6:1
President-Elect's 136:12 139:9	problem 107:17 138:4 148:9	programs 14:20 23:16 36:11 140:7	provides 11:11 114:13 140:19,22	Q
presiding 1:10	problems 50:18 54:5,15 57:8 74:6 107:18	project 25:7,8 26:14 26:19 27:2,3 35:5 99:15 105:4,5,10 112:6,7 115:5 120:10	providing 25:14 30:11 35:13 97:21 139:17	Qatar 88:11 104:6
press 70:20	procedures 23:2	Province 21:19	qualifies 137:8	
pressing 12:15	proceed 28:7 60:19 61:10 137:20	provinces 20:16	qualifying 23:6	
pressurization 117:3	proceeding 82:3	PSEG 2:25	quality 2:9 15:4 55:19	
presumably 90:14	process 24:8 26:7 100:6 103:5 114:3 135:13	public 7:10,11 21:3 33:11,12 34:6 52:22 65:20 90:22 95:16 97:4 117:5 117:18 118:4,16 135:22 149:3,4,8 150:2	quantities 84:8	
pretty 39:12,21 48:5 56:19 59:14 64:21 65:2 67:16 71:18 75:5 77:13 78:9 81:4 87:1,13 93:8,14 123:2	processes 114:4	publications 40:12 52:21,22 53:2,3	quarter 116:15	
previous 17:17 64:12 131:9	processing 22:9	publicized 149:3	question 31:14,14 33:1 54:19 61:22 63:2 83:13 89:11 90:3 94:6 123:9 125:3 132:14 146:12	
previously 78:16	processors 127:22	publicly 94:20	QUESTIONER	
pre-combustion 103:17	produce 27:3 82:16 83:16 106:21 116:18 125:5 126:7	public's 132:7	90:5 91:4 92:7 93:17,22 123:11 124:19,22 149:20	
pre-feed 118:10	producers 20:22	published 52:20 69:6 79:2	questions 30:20 31:3 33:7 38:16 43:1 47:11 51:18 81:9 122:4,9 123:7 127:5 146:15	
price 70:17 74:18 75:1 81:22 97:8,14 109:13 116:22 125:9,11,13 126:14	producing 82:14 112:1 113:12 114:15	publishing 73:13	quickly 27:19	
prices 59:11 74:22 92:13,19 93:18 98:10,13 100:21 101:6,6 109:21 110:2 111:12	product 100:16,16 104:6 112:3 114:1 116:21	PUCO 3:6	Quinn 3:19 5:17 6:21 127:16 128:4 128:14,21 129:1 135:17 145:14	
Primarily 112:8	production 10:1	pull 25:10 28:5 84:7	quite 65:15 85:7 123:3	
primary 10:4 57:4	22:8 34:14 71:4	pullback 108:22	quote 62:9 114:19 114:19 115:1,4	
principal 147:16	72:20 76:7 78:18	pulled 83:12	quotes 77:15	
principle 22:19	80:10,12 82:8	pulverized 108:9	R	
principles 23:2	96:22 113:6	pun 111:5	RAHALL 3:21	
prior 116:16	115:22	pure 113:12	raise 16:22 30:21 81:9 100:20 109:13 124:17	
priorities 134:5	products 97:13	purely 49:7	RAJA 4:8	
private 18:19,20 96:9	101:15 102:4,10	PURGERT 3:19	rambling 125:2	
privileged 122:13	103:1,12 109:14	purpose 30:10	ran 70:4	
probably 38:15 44:17 46:19,20 61:16 66:9 69:8 77:3 80:1 89:10	111:7 114:15	purposes 31:1	Randy 80:5	
	Professor 52:9,12 53:12 56:22 59:5 92:7	pursue 136:17 139:21		
	profile 140:18	push 28:5		
	profit 94:13	put 32:12 39:13		
	program 11:10,14 19:2 20:14 23:22	72:4,7 73:2 76:2 77:15 91:21		
		Protection 23:11		
		protocol 17:2		
		prove 126:14		
		proven 60:16 62:1		
		provide 25:11 32:18		
		115:14 116:3 119:1 123:21 124:6		
		putting 144:15		

range 19:15 22:2 103:11	118:17 138:5	107:17	remindful 135:17	18:14 25:1 26:11 34:15,21 36:5
Rapid 16:12	recall 138:10	regarding 149:22	renewable 15:10 92:4,5 136:15,19	52:17 53:5 79:5
rare 114:9	received 26:5 128:15	regardless 76:21	136:19 139:18	96:7 97:18,19
rate 70:3 123:22	recession 101:2	regime 61:9	renewables 110:18 140:8	124:2 143:15
ratio 21:9	recognize 7:2 8:15	region 21:1	renewal 15:11	reserve 10:3 106:16
rational 138:18	recognized 119:14	regional 20:12 24:13 25:3 35:18 96:12	rent 68:5	reservoir 22:19
RDS 1:18	recognizes 119:12	region's 22:18	reoriented 25:8	reservoirs 21:13,15 21:21 25:22
reach 132:22	recognizing 70:2	Register 37:20	repeat 114:18	resid 111:20
reached 18:1 24:10	recommendation 30:11	regular 6:7 7:5	replace 26:19 65:8 73:22 83:17 84:18 85:5	residuals 102:21
read 43:16,21,22 44:2 48:5 61:12 62:8 63:5,9 72:22 79:14 81:1 87:7,7 90:21 118:18	recommendations 12:19 48:22	regulating 117:12 117:13	replaced 74:3	residues 105:5
reading 86:18 133:15 139:3	recommended 17:7 50:5	regulation 23:14 119:19,20 133:9 137:13	replacement 17:9	resistance 109:4
ready 27:12 113:3 115:14,17 117:17 139:10	reconciled 148:6	regulations 7:9	replacing 83:18	resolves 105:12
real 32:20,21 43:17 56:2 79:19 131:17	reconstitute 150:8	23:12 135:7	report 5:8,9 12:20 27:20 39:5 42:6 45:21,22 46:1,2 48:7,10,20 49:1,17 49:22 50:13 52:1 58:11,13,16 61:11 69:20	resource 12:6 13:2 77:5
realistic 106:10	record 72:13 148:12	regulatory 4:21 9:8 23:3 37:12 61:9 97:5 114:6 119:16	resources 2:25 4:6,9 4:20 73:21 74:1 100:14 106:19 108:5 141:15	
realities 41:14 55:10	recording 31:1	120:10 134:13,20 135:1,13,22 137:5	respect 90:8 123:19 139:2 141:13	
reality 11:6,11 98:18	records 145:4	137:22 138:11	respond 18:21	
realize 60:6,6 144:17	recovery 21:22 34:12 61:5 113:15 114:8	reject 73:14	response 89:12 102:3 146:16 149:10 150:13	
realized 29:11	red 104:4	rejected 73:10	responsibility 15:22	
really 32:8,10 33:16 34:16 42:15 43:10 53:21 54:3,7 55:9 57:2 59:17,20 62:12 67:6,8 69:1 75:15 77:22 79:20 80:20 82:1,7 83:11 84:11 89:3 93:6 95:6 104:10 108:1 124:1 133:17 134:9 138:11 139:1,20 140:16 141:20 142:9,11 144:16 145:4	redistribution 9:21 redo 106:4	relate 14:3	responsible 9:16 18:16	
reaping 65:20	reductions 16:12	related 21:1 95:19	rest 57:17 71:18 82:19,21	
reason 82:10 114:6 114:6 126:4	reduce 14:7,13,22 18:3	relating 92:19	restore 135:21	
reasons 57:6 118:16	reduced 14:17	relationship 38:5 50:3	restraints 132:20	
	reducing 16:11 18:12 57:12	relative 71:18	restructured 25:7 25:17	
	reduction 17:1	relatively 83:8 113:12	result 50:14 101:6 107:12	
	reductions 121:19	release 13:3 99:3	results 13:3 92:12	
	refer 101:9	relevant 132:7	Retail 3:10	
	reference 14:12 91:5	reliability 120:8 142:1 144:11	retain 50:6	
	referred 15:17	relies 142:3	Retirement 17:9	
	refine 100:11	religious 108:11	Retro 80:11,13	
	refineries 111:19,22	rely 11:21	retrofit 19:19 20:5 20:8	
	refinery 111:17 112:6,9	remains 132:18	retrofits 17:18	
	reflect 19:10	remarks 5:5 90:7 92:10	returning 145:15	
	reflected 45:15	remember 45:17	reuse 25:15	
	reform 133:6,9	remembered 143:7		
	refrain 145:6	remembered 143:7		
	refrigeration 68:20	remind 59:2		
	regard 105:13			

REUTER 3:21,22 reversing 121:10 review 23:15,22 24:3,8 26:7,10 45:3,5 revolution 57:2 75:17 revolutions 57:3 re-use 85:4 Ric 2:15 119:6 122:9 123:8 rich 1:14 31:4,6 52:3 122:7 129:11 Richard 1:22 2:22 2:22 4:17 129:1 rid 88:4 right 9:1 13:7,7 28:10,16 45:13 47:9 55:14 58:6 62:9 65:4 75:6,11 88:14 89:17 90:1,2 97:2 100:17 105:10 107:13 118:10 121:12 132:19 146:18 rigorous 26:7 78:8 rise 121:9 rising 92:19 111:11 risk 98:16 risks 28:4 road 60:18 66:17 75:20 109:17 roadblocks 85:15 86:2 ROB 2:2 Robert 1:14 3:4 8:21 9:5 Roberts 141:9 142:16 144:20 Rockefeller 53:7 ROGER 1:23 role 12:22 16:18 145:21 ROLLAND 3:15 room 10:13 36:13 55:20 58:16 61:16 64:16 75:8 101:1 122:17 140:18	Rose 14:9 round 25:5 route 113:10,10 routes 113:12 row 71:5 79:18 Rudins 147:13 ruffle 100:19 Rule 138:7,11 rulemaking 117:10 rules 122:1,1 run 44:20 71:3 91:16 98:16 107:16 144:4 running 63:16 rural 53:5 63:6 rush 101:19 Russia 44:6 72:20 77:12 88:11	scale-up 26:18 27:12 schedule 106:4 scheduled 22:1 School 4:15 9:6 science 3:21 52:13 53:1,6 66:11,15,16 96:11 107:7 scientific 23:2,13,16 66:1 84:2 score 105:15 140:16 scrapped 140:10 sea 61:1 70:1 73:17 seats 130:13 131:7 second 8:5,6 13:14 14:19 41:18 50:9 51:14 99:13 130:4 142:5 143:2 Secondly 50:13 Secretaries 43:13 secretary 5:5 6:13 8:12 9:13 10:4,8 12:13,16,18 30:12 31:13 33:15 36:7 38:12 40:15 43:12 48:11 147:17 149:15 section 10:21 123:13,14 sector 11:8 18:19,20 118:4 sectors 111:13 secure 127:1 security 18:4 27:17 27:17 30:3 42:18 44:14 125:15 126:3,11,19 says 61:13 69:2 70:5 76:22 83:2,3 94:10 99:7 115:7 118:18 139:1 scale 16:12 20:10 21:12,14 22:15 25:18 27:11 65:14 65:15,17 69:3 85:6 85:6 119:3,4 120:12 143:21 scaled 118:14	serving 150:1 set 18:1 56:7 103:13 137:17 145:3 seven 20:18 21:20 25:2,3 71:5 131:9 seventh 42:14 Seventy-five 116:16 shale 80:4,18,22 81:2,5 82:6,8 SHANNON 2:18 shape 114:17 share 29:4 37:13 91:2 93:16 117:15 shared 18:17 Shares 104:15 sharing 29:6 37:8 sharp 40:17 Shell 106:1 107:14 ship 100:16 shipped 83:7 shipping 78:9 shit 70:6 shock 84:5 shoot 116:1 148:15 short 130:14 144:17 shorter 130:21 shortfall 111:4 shortly 109:3 113:9 show 4:4 14:15,17 82:21 showed 86:20 106:15 123:17 shown 58:10 shows 77:20 shut 123:6 side 20:10 32:14 142:9 Siemens 113:2 sign 82:2 signaled 139:13 signals 133:18 Signer 9:7 significant 28:4 45:5 59:14 67:16 71:18 77:13 81:5 significantly 16:4 24:16 58:8 68:12 silver 121:7,11
--	---	--	--

similar 42:10	social 52:13 53:1 54:5,15	68:14 89:4 95:4 106:17 133:3	38:2 131:11 148:4	stepping 120:18 steps 15:5,8 16:22 17:7 109:16
SIMON 1:24	societies 33:6 62:14 71:14	134:18 149:6,7,9	STANKO 4:2	stimulus 133:1
simple 60:9 105:17	society 62:16 68:12 82:13	speaker 2:6,8 3:20 95:10 98:21,22 127:16 131:20	start 53:16 54:17 56:15 86:6 138:9	stock 81:13
simply 49:1	sociologist 85:14	speakers 6:16 7:4 42:1 52:5 148:21	started 33:22 39:17 58:18 81:22	stockholders 94:12
simultaneously 13:21 28:7	Sociology 53:5	speaking 7:1 83:9 96:18	starting 70:9 73:13 81:9 106:3	stole 67:1 86:14
singled 18:2	socio-economic 52:18	special 6:10	start-ups 105:21 106:8	stop 14:5 15:18 111:2
sit 58:19	solar 98:7 99:9	specialization 52:17	state 3:24 6:17 15:6 15:12 21:2 26:22	stopped 121:5,6
site 59:20	Solid 2:17	specializing 95:16	52:14 54:4 59:4	stopping 144:18
sited 85:13	solids 104:12	specific 13:15 37:15 55:21	60:15 66:3,3 84:13	storage 11:17 13:19 17:6 18:7,15 20:10
situation 50:17,22 56:20 104:22 118:3	solution 3:3 37:18	specifically 131:18 142:14	stated 142:21	20:11 21:6,9,21
six 15:6 56:14 60:2 63:22 70:16 89:2 130:12	Solutions 2:13 8:17	specify 18:19	statement 111:8	23:5 24:15 25:10
six-day 87:1	solve 12:14	speculation 133:19	statements 51:1	27:13,13 29:10,20
six-year 105:2	solvents 19:19	speech 14:8	states 3:11 11:20	29:22 41:20 44:18
SKIP 4:3	solving 57:7	speed 81:5	12:14 13:13,17	102:8,9 115:13,17
slate 102:4 112:3	somebody 48:8 67:1 85:20 94:11 120:18	spend 55:6 69:11	14:14 20:15,16	142:14,22 143:3
sleepwalking 77:17	soon 12:3 132:22	spending 82:15	23:21 25:4 30:4	143:20 144:9
slid 89:8	sooner 121:16	Spengel 4:2 9:4	32:17 44:7 55:9	147:22
slide 62:3 64:12 69:16 72:3 88:3 98:2 117:6	sorry 31:4 47:17	spoke 132:15	store 25:20 83:21	84:6
slides 89:7 98:3 102:11 127:7	82:3 88:16 89:14 123:10 149:19	spot 103:13	stories 63:15,17 71:8 125:4	
slipped 60:5	sort 31:9 54:13 56:6	spread 108:16	storing 25:14	
slogan 98:19	56:7,14 60:15 62:6	spreading 108:21	story 68:13,14 74:4	
slowed 14:9	80:16 84:1 110:8	spring 149:13	strategic 10:3 36:21	112:19
slowing 101:2	118:3,11 133:11	square 25:9	stream 113:13,18	
slowly 65:22	148:5	squarely 11:9	Street 1:9 4:9 99:14	
Slutz 3:23 5:6 6:14 7:2 9:13,15 10:7,8 31:13 33:15 36:7 38:12	sorts 118:20	stability 50:21 51:5 136:1	strong 97:11 112:13	
smacked 93:6	sought 17:1	stabilized 50:18	strongly 107:21	
small 21:12 118:7	sounds 109:9	staff 30:18 41:19	structures 37:12	
smaller 48:18 100:3	sour 100:5,10	48:20 129:11	Stu 2:11 36:14	41:19 124:8
smart 53:22 79:6	source 141:21 143:5	staffers 41:3 43:14	STUART 4:4	
Smith 3:16,24,25 4:4	144:19	staffs 96:2	stuck 101:4	
snapshot 102:15	sources 21:8 75:22	stage 58:6	students 56:22 65:19 67:6 88:5	
SNG 96:21 97:10 109:2,14 112:15 112:22 113:4 116:19,19	South 4:15 9:5 104:5	stamps 68:4	studied 92:18	
snuck 66:14	Southern 3:11,25 4:10	stand 8:15 56:12	studies 53:3,4 88:22	
	so-called 115:20	60:13 149:18 150:15	study 12:8 17:17	27:5 39:3 42:14
	SO2 139:4	standard 92:4,5 136:20 144:16	30:2 38:16 47:18	84:15,17 86:14,16
	Spain 87:10 91:12	standards 15:9,12 144:9	113:17 140:1	87:3,6,13
	span 20:16	standpoint 34:8	STEPHENS 4:3	stuff 56:1 67:5 73:1
	speak 7:18 63:10		stepped 32:17	76:1,16 100:6

subject 21:7	137:5	107:22 126:5,6	tell 31:15,17 60:20	themes 43:19 44:1
submit 149:4,21	SURBER 4:4	133:1 145:14	63:14,17 64:6 75:8	44:20
submitted 12:12	sure 43:5 45:13	talked 41:8 42:17	88:5 101:16	thick 43:17
subsidies 68:5	46:5 73:5 74:22	46:12 64:11 74:6	telling 88:1	thing 23:16 35:12
substantial 87:1	77:10 86:13 92:22	76:13 79:4 83:15	ten 15:7 25:2 27:5	44:7 45:17 61:17
93:14	127:8 138:2 148:6	93:3 103:3 148:3	58:8 61:11 74:11	67:21 74:8 76:16
substitute 42:3	148:14,16	talking 55:6,13 59:9	87:12 136:22	76:20 80:17 91:21
76:10 112:12,14	surprised 54:17	60:7,8 67:4 68:3,5	tend 26:8	99:8 126:2 137:4
succeed 13:22	surprisingly 69:4	68:18 72:19 75:15	tendency 66:10	things 10:18 11:16
success 136:8	surrogate 138:11	80:5 83:17 84:4	Tennessee 53:10	32:6 34:20 37:5,8
successful 23:4,8	survey 102:13	86:1 87:10 95:1	term 115:21 135:1	40:1 54:15 68:21
30:6 132:5 137:21	surveys 21:3	98:6,7,8 100:22	135:20 143:2	73:1 79:13 84:11
143:1	survive 62:15	115:13	144:17	88:22 98:18 112:8
Suez 66:22 71:8	suspect 69:1	talks 71:13	terms 41:1 55:8	117:9,21 119:5
sufficient 137:12	sustain 136:2	task 13:10 36:16	56:15,20 57:12	126:12 143:6
suggest 140:2	Sustainable 12:10	tax 119:15 123:14	59:18 65:16 66:1	think 10:12 12:1
suggestions 48:16	sustaining 35:14	133:5	66:11 73:16 78:1,3	29:3 31:20 32:1,9
suggests 137:18	Sweeney 112:6	TCF 65:10	80:21 81:14 83:6	32:11,14 33:16,17
suitable 20:8 138:3	sweet 103:13	teach 54:4	84:20 86:18,21	34:6,8,16 35:1,1,4
138:17	Sy 1:15 149:19,20	team 39:3 129:17	88:13 90:15 137:3	35:11,16,19 38:15
summarizing 45:18	150:11	Tech 3:12	140:1,17,18,19	40:1 41:2 44:2
46:5	symbolized 28:8	technical 33:6 86:3	143:12,14 144:8	46:14 54:18 56:5
summary 43:17	syn 104:8	114:2 120:7	148:7	56:19 57:13 58:4,6
46:20 87:8	syngas 113:18	technological 58:15	test 22:15 144:11	65:3,14 66:14
summer 24:19	Synthetic 96:8	technologies 5:15	testament 135:12	67:19 70:12,20
39:16,21	system 99:8 112:18	13:7 15:22 19:16	tested 27:11	75:13,19 76:7 77:2
summit 141:15	systems 2:17 27:9	19:18 20:5 22:12	testimony 81:12	79:20 81:20 82:7
supplemental 126:5	112:17,21	25:13 27:11,13,20	tests 21:12,18,20	82:13 83:22 85:7
126:12	T	28:2,11,13,20	22:7	85:14 86:4,10 88:6
supplementary	table 57:14 65:16	95:18,20 97:12,17	Texas 71:11 90:21	91:8,12 93:4 100:1
104:19	132:18 133:3	97:21 107:4,15	112:7	100:1 105:9,12
supplier 115:2	147:18	139:19 140:9	thank 8:11 10:9	106:1,5,15 107:10
suppliers 115:3	take 14:11 19:12	142:13,15	12:18 30:14,15	107:12 109:8,18
supplies 72:10	30:9,19 32:11	technology 4:16 9:6	38:2,10,11 47:13	110:21 111:6
128:1	38:16 45:1 60:15	11:18 13:6,8 16:2	49:3,5,12,13 51:22	114:13 117:16
supply 57:8 58:15	60:17 67:2 83:16	18:12,21 19:14	53:15 90:5 94:18	118:9 121:15
66:21 125:15	84:16 93:2 117:7	25:10,19 28:5,9,13	94:20 96:16	122:16 126:7
126:5,6,13	126:9 130:17	28:15 29:11,22	122:12 123:11	129:17,21 131:17
support 25:1 30:9	143:8 147:19	30:1 31:21 33:14	124:19 127:13,15	131:20 133:19
38:8 118:4,12,22	148:2 150:9	36:18 37:2,4,5	129:1 146:8,18,22	141:11,17 142:5
123:3	taken 15:5 140:4	43:7 74:2 95:12	149:1,18 150:11	144:2 148:9 150:6
supporting 142:12	takes 11:5 85:8	107:7,9,11,13,20	150:15	thinker 98:22
supports 136:3	135:14	108:4 120:16,20	thanks 49:18 88:16	thinking 56:15
141:4	talk 10:21 31:20	125:13 139:14,18	88:20 95:6 127:3	thinks 82:9 85:4
suppose 131:16	47:13 54:14 69:13	143:17 144:3	146:11 148:19,20	third 25:5 41:22
supposed 72:9	74:7,7 75:13 81:2	Ted 1:20 8:17	148:21	119:17 143:11
138:12	86:19 102:2	telephone 39:18	that'd 77:9	THOMAS 4:5
Supreme 128:18		117:19 127:11	theme 42:4	thought 11:15 40:8

43:2 47:21 61:17 81:21 129:5	22:3,5 25:15,21 TONY 3:4	turn 39:1 136:4 147:3	25:4 30:4 44:7 55:9 57:11,22 63:7 64:3 67:8 68:20 74:5 83:7,19 90:13 90:16 91:9 92:4 99:9 101:22 109:20 114:12 125:19 128:18 141:21 147:5	users 48:3 uses 12:1 usually 54:10 Utilities 52:22 Utility 4:21 9:7 U.S 14:3,11,17 15:1 16:1 20:7 21:6 23:11 24:17 25:1 26:11,14 88:10,14 96:6 97:4,12 98:1 99:22 100:13,14 100:18 102:22 103:10 105:22 106:7 107:19 108:4 109:5 115:5 116:2,8,16,17 118:5,15 127:20 128:11,13
thoughtful 12:17	tool 138:3 139:10	TURNBULL 4:6	universal 34:5	
thoughts 40:10 146:15	top 23:20	turned 41:7 69:5	universities 21:2 87:10	
thousand 65:13	topic 12:8 55:22	turns 23:19	University 6:18 33:3 52:14 53:10 59:6	
three 13:19 14:18 21:16 25:11 46:13 53:21 54:1 64:13 65:22 68:19 75:22 86:13	total 19:9 22:5	TV 4:4	66:8,14 96:13 106:7 107:19	
thrown 85:21	touch 129:7	twice 130:5	108:4 109:5 115:5	
TILLMAN 4:5	touched 141:19	twilight 126:10	116:2,8,16,17	
Tim 59:4 84:15,22 92:16	tough 31:14	two 16:4 21:17,22	118:5,15 127:20	
time 10:15 13:8 14:10 29:3 30:9 34:18 35:13 54:9 55:6 57:4,6 61:2 69:13 80:12 84:7 85:20 86:9 88:1 89:10 94:16 104:17 124:21 127:4,13 131:1 132:2 133:20 135:10 136:8 144:22 146:18 148:22 149:7	town 126:20	22:2,9,11 45:21 46:3,11 53:22	University's 52:16	
timelines 13:10	track 14:15	65:22 77:4,6 89:11	unknowns 121:1	
timely 51:3	tracking 34:15	92:17 93:15 98:3	unlimited 91:8	
times 27:5 56:13 57:22 68:19	tracks 13:20 121:5 121:6	98:18 99:17	unprecedented	
title 67:1 92:3 97:15	Trading 3:15	106:11 107:5,6	56:16,20 66:20	
titled 12:9	traditional 108:6	115:3 130:8 134:9	unrealistic 110:11	
today 7:2,6,12 18:21 45:1 64:1 74:20 89:4 104:12 110:10 113:21 114:5 121:17 145:5 148:21	traffic 33:5	146:12	110:13,15	
today's 6:16 7:22	tranches 136:21	type 135:22 139:2 140:7	unsuccessful 138:15	
TODD 2:10	transcript 7:17	types 37:3 39:13 44:1 120:9	unused 28:2	
told 82:18,20 94:11 94:12 144:21	translate 131:15	TYRON 4:7	UPADHYAY 4:8	
Tom 1:17 3:7 90:3 123:8,9,11	transmission 90:9 90:12 92:1 99:8	T-A-B-L-E 5:1	update 13:15 102:14	
ton 115:16	transport 100:11,12 112:18	<hr/>	updated 49:21	
tons 12:2 17:20 22:3	Treasury 36:22	U	Upgrade 17:11	
	tremendous 13:2 24:4 60:11	UIC 117:10	upgrades 16:14 17:18	
	trends 56:19	ultimate 109:18	uptake 28:14	
	triangle 28:8	ultimately 134:6	Urban 53:3 96:12	
	tried 85:12	ultra 9:22	urge 50:22 150:3	
	tries 90:10	ultra-supercritical	urgency 12:9 58:20	
	trigger 137:13	16:17 17:4	URS 4:2 9:4	
	trillion 132:22	unconventional	use 7:18 12:5,14 15:10 22:12,13	
	tripping 148:8	underground 34:1 42:20,22	27:22 40:11 67:22 71:17 76:11 81:12	
	Tropes 104:9 112:2	understand 32:1,3 41:4 65:15,18,19	102:10 106:18,19	
	trouble 126:21	65:19,20 85:8	106:20 107:11,12	
	true 125:6	101:13	107:14 110:14,16	
	TRUJILLO 4:6	understands 43:6	118:19 126:4,4,11	
	try 40:22 55:7 95:2 95:2 107:18	underway 27:5	139:10 142:7	
	120:18 122:7	unequivocal 121:22	useful 47:22	
	124:6 129:5 140:1 146:4 148:5	Uniform 119:18		
	trying 44:2 84:14 123:20 142:11	unique 20:21 42:20		
		United 11:20 12:14 13:13,17 14:14,16		
		15:1 20:15 23:21		

52:3,6 95:9 127:15	137:20	we're 6:9 9:10 19:22 23:12 28:17	99:8 109:7,9,10,19 windmills 64:17 windshield 85:22 WINES 4:17 wings 83:5 winning 130:3 wish 7:18 31:17 149:7,8 wishes 149:5 witness 56:12 women 63:2,8 won 131:8 145:1 WOOD 4:18,19 word 60:16 118:20 words 43:21 59:21 work 18:17 19:15 23:13 30:5 33:7,8 33:9 34:9 35:8 36:19 39:1 48:3 49:10 73:14 78:22 88:21 90:10 95:2 99:16 104:19 148:5 150:7,10 worked 39:16 59:4 85:11 working 23:10 33:10 35:18 38:20 41:19 59:3 92:16 95:5 96:1 146:3 147:9 WORKMAN 4:20 world 5:10 10:13 27:10 28:16 30:4 35:11 41:16 50:20 54:12 55:10 56:2 56:17 57:8,17,20 64:5,9 67:9,10,13 68:11 69:4,14,17 71:9,19 98:1 103:10 104:11 111:9 113:21 115:9 141:22 142:3 143:5 145:3 146:2 worldwide 16:19,22 141:22 143:1 world's 15:14 24:14 WorleyParsons	1:23 2:12 worth 142:5 wouldn't 82:17 84:19 125:12 wrapper 140:10 Wright 2:2 write 40:21 54:1,3 writing 53:20 written 40:19 wrong 56:4 79:17 142:9 wrote 41:3 53:21 Wyoming 59:6
Y				
year 12:2,9 16:21	19:7 20:12 21:7,13 22:3,4 25:9,16,21 26:9,17 46:2,11 79:8,17 80:6 102:14 106:5 114:22 137:6 146:7 147:11	yearly 50:3	years 12:11 15:20 21:10 28:21 38:2 43:2 45:21 46:3 58:8 62:17 64:1,3 70:3,11 71:5 74:11 79:17 82:9 87:12 91:18 95:22 107:6 128:5 135:14 145:2 146:20,21	
yield 28:22	year,they 24:12	yellow 104:5	Yergin 70:4 71:3	
wants 48:9 87:14	Yogi 145:9	yesterday 33:5 50:1 51:8 69:21 129:18	yield 28:22	
Z				
wanted 42:15 43:21	zero 27:14	zero-sum 120:14	Ziegner 4:21 27:1	
105:16 148:11				
wants 48:9 87:14	\$			
	\$1.4 81:13			

\$10 81:14 94:10	1952 130:9	250 86:12	6 5:2
\$100 79:7	1970s 76:17	250,000 22:3	6,000 76:3
\$120 19:6	1985 96:9	2500 84:12 86:19	60 65:9 116:3
\$1200 70:14	1990s 61:3	28 116:3	130:14
\$14 94:13	1995 95:13	29 105:22 106:1,5	600 68:17
\$140 125:7	1997 19:5	107:1	63 79:14
\$200 70:18			65 123:16 144:13
\$3 82:19	2	3	7
\$36 20:3	2 40:11 60:21	3 40:17 58:1	70 18:22 72:10
\$4 82:21	2,000 122:18	3,500 21:5	70s 85:13,20
\$4.75 79:15	2.5 58:1	3.8 21:7	74 78:15
\$429 19:9	20 24:21 64:3 80:1	30 39:20 45:6 69:12	75 123:16 126:1
\$5 125:20	128:4 144:12	130:10,21	75,000 81:18
\$50 125:5	20th 130:6	30th 99:14	
\$6.50 74:19,20	200 17:20	300 23:17	8
\$60 91:22	2000 14:18 82:18	300,000 25:15	80 97:19 122:17
\$700 132:21	2002 14:13	32 130:10	81 105:1
\$9 94:10	2004 58:11 82:20	33 80:11	85,000 100:7
1	102:16 104:16	34 64:1	9
1 22:3 25:20 40:7	105:21	340 25:12	9 5:4
1,000 62:18 65:11	2006 58:13 86:22	35 91:16	9:00 1:9 6:2
122:20,21	2007 14:4 58:16	350 20:21	90 25:13 26:1
1.1 12:1	74:16 75:11		900 21:10
1.5 58:1	102:14,16 104:17	4	96 5:15
1.6 57:19	110:12	4 40:19	
1.7 16:20	2008 1:6 5:17 50:15	40 5:7,8 65:2 81:8	
10 5:6 15:20	58:17 110:10	130:22	
100 52:20 145:8	2008's 74:16	400 54:8 68:16	
11:45 150:16	2008/2009 51:19	42 20:15 77:5	
12th 69:21	2009 22:1 50:7 51:1	45 20:9 27:3	
120 85:2	51:9 149:13	48 5:8	
129 5:18	2010 22:2 104:16,18	48a 123:14,15	
14 1:6 69:11 79:17	105:21 134:3	48b 123:14	
145,000 20:6	2011 22:2	49 5:9	
15 15:2,20 20:4	2012 14:11,14 106:9		5
107:10	106:9	5 76:3	
16 22:5	2015 72:11,16 94:3	5th 47:5 48:17	
160 26:19	2018 79:22	50 19:8 90:1 140:22	
1600 69:18	2020 24:22 110:12	500 19:4	
17 14:19	2022 60:8,10	53 5:10 69:7 145:18	
18 14:14 57:2 94:3	2025 14:7	530 26:18	
137:19	2030 15:8 70:14,17	54 141:1	
184 62:16	141:2	55 87:18	
19 79:22	21 91:20	57 130:16	
1930 130:9	21-seat 130:19	58 130:16	
1932 130:9	2350 1:9		6
1950 130:9	25 69:12 95:21		
	137:1		

CERTIFICATE

This is to certify that the foregoing transcript
in the matter of: Full Council Meeting

Before: National Coal Council

Date: November 14, 2008

Place: Washington, DC

represents the full and complete proceedings of the
aforementioned matter, as reported and reduced to
typewriting.

Eric Mollen

Eric Mollen