

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Otter Tail Corporation :
Advance Determination of : Case No. PU-06-481
Prudence Application :

Montana-Dakota Utilities :
Co., a Division of MDU :
Resources Group, Inc., :
Advance Determination of : Case No. PU-06-482
Prudence Application :

TRANSCRIPT OF
SUPPLEMENTAL HEARING
VOLUME III

Taken At
State Capitol
Bismarck, North Dakota
April 28, 29 & 30, 2008

BEFORE THE HON. AL WAHL
-- ADMINISTRATIVE LAW JUDGE --

C O N T E N T S

WITNESSES:

DALE E. KLEIN

Direct examination by Mr. Guerrero	1422
Cross-examination by Ms. La Seur	1436
Cross-examination by Mr. Binek	1455
Examination by Commissioner Cramer	1466
Examination by Commissioner Clark	1475
Redirect examination by Mr. Guerrero	1478
Recross-examination by Ms. La Seur	1480

TERRY DEASON

Direct examination by Mr. Binek	1486
Cross-examination by Mr. Guerrero	1492
Cross-examination by Ms. La Seur	1497
Examination by Commissioner Wefald	1500
Examination by Commissioner Clark	1506
Examination by Commissioner Cramer	1512
Recross-examination by Ms. La Seur	1516

TIMOTHY J. ROGELSTAD

Direct examination by Mr. Guerrero	1523
Examination by Commissioner Clark	1529
Redirect examination by Mr. Guerrero	1531

OTP/MDU EXHIBITS:

No.	Description	Off'd	Rec'd
325	Prefiled Supplemental Direct Testimony of Timothy Rogelstad	1524	1525
325A	Summary of Timothy Rogelstad	1525	1525
341	Prefiled Rebuttal Testimony of Daniel Klein	1424	1425
341A	Summary of Daniel Klein	1424	1425

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25**C O N T E N T S (Continued)**

No.	Description	Off'd	Rec'd
342	Prefiled Daniel Klein Exhibit History of Natural Gas Price Forecasts made by the Energy Information Administration (\$MMBTU, in Year 2000 Dollars)	1424	1425
343	Prefiled Daniel Klein Exhibit Changes in Coal and Natural Gas Price Forecasts to Electric Generators, as Compiled from Annual Energy Outlook, 1998-2006	1424	1425
344	Prefiled Daniel Klein Exhibit U.S. Net Imports of Natural Gas by Source	1424	1425
345	Prefiled Daniel Klein Exhibit Historical Comparison of Natural Gas by Source, 1990-2030	1424	1425
346	Prefiled Daniel Klein Exhibit Location of World Oil and Natural Gas Reserves	1424	1425
347	Prefiled Daniel Klein Exhibit Average Per-Household Energy Consumption, 2001	1424	1425
348	Prefiled Daniel Klein Exhibit Median 2005 Household Income for North Dakota Counties to be Served by Big Stone II	1424	1425
349	Resume of Daniel E. Klein	1424	1425
350	Prefiled Daniel Klein Exhibit Surge in Natural Gas Price Stoked by New Global Trade	1424	1425

C O N T E N T S (Continued)

PSC EXHIBITS

No.	Description	Off'd Rec'd
4	Supplemental Direct Testimony of Terry Deason	1486 1487

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1 (The proceedings herein were continued,
2 commencing at 9:02 a.m., Wednesday, April 30, 2008,
3 as follows:)

4 JUDGE WAHL: The record will show that it
5 is a little after 9:00 a.m., April 30th, 2008,
6 continuing the supplemental hearings for the
7 advance determination of prudence applications of
8 Otter Tail Corporation and Montana-Dakota Utilities
9 Co. for their respective participation and
10 ownership interest in the Big Stone II Generating
11 Plant, Public Service Commission Case Nos.
12 PU-06-481 and PU-06-482, respectively. Mr.
13 Guerrero.

14 MR. GUERRERO: Thank you, Your Honor. The
15 applicants would call Mr. Daniel Klein by
16 telephone. My assistant, Dawn Daniels, is
17 currently calling him as a heads-up and then you
18 can call in just a minute.

19 Mr. Klein filed rebuttal testimony,
20 OTP/MDU Exhibit 32, along with Exhibits up through
21 41. In the big book it begins at tab 32.

22 JUDGE WAHL: Mr. Klein, this is Al Wahl
23 with the Public Service Commission to hear your
24 testimony in the Big Stone II cases. Are you ready
25 to proceed?

1 THE WITNESS: Yes, I am.

2 JUDGE WAHL: Mr. Klein -- has Mr. Klein
3 testified previously? Mr. Klein, as you're aware,
4 your testimony is required to be under oath and I'm
5 required by law to advise you regarding perjury
6 before administering the oath. Perjury is a false
7 statement of material fact which you do not believe
8 to be true; in other words, generally speaking, a
9 lie. In North Dakota perjury is a Class C felony,
10 punishable by a fine up to \$5,000, imprisonment for
11 a period of up to five years, or both.

12 **DALE E. KLEIN,**
13 being first duly sworn, was examined and testified
14 as follows:

15 JUDGE WAHL: Mr. Guerrero.

16 MR. GUERRERO: Thank you, Your Honor.

17 **DIRECT EXAMINATION**

18 **BY MR. GUERRERO:**

19 Q. Good morning, Mr. Klein.

20 A. Good morning.

21 Q. Would you please state your name for the
22 record and spell it?

23 A. My name is Daniel E. Klein, and that's
24 spelled K-l-e-i-n.

25 Q. And by whom are you employed and in what

1 capacity?

2 A. I am with Twenty-First Strategies, LLC,
3 that's spelled out and hyphenated Twenty-First. I
4 am president and founder and sole employee.

5 Q. And what is your -- what do you do for
6 Twenty-First Century?

7 A. Twenty-First Strategy --

8 Q. Excuse me. Twenty-First Strategy.

9 A. -- is the name of the firm. I do
10 economic, energy and environmental consulting. I
11 do this for government agencies, power companies,
12 associations and nongovernmental organizations. I
13 founded the firm back in 1995 and have been doing
14 it since then. For the 20 years prior to that I
15 was doing similar work with the consulting firm of
16 ICF Resources, where I was a senior vice president
17 and director.

18 Q. And what is your educational background?

19 A. I have a bachelor's degree from the
20 Massachusetts Institute of Technology. That was in
21 1973. And then in 1975 I earned an MBA degree from
22 the Stanford Graduate School of Business.

23 Q. And did you have occasion to file
24 testimony in this matter, Mr. Klein?

25 A. Yes, I did.

1 Q. And do you have that in front of you or
2 with you this morning?

3 A. I do.

4 Q. Okay. And that has been identified as
5 OTP/MDU Exhibit 32?

6 A. On mine it says OTP/MDU Exhibit 341.

7 Q. Oh, excuse me. 341. Excuse me.

8 A. Correct.

9 Q. It's at tab 32. And along with Exhibits
10 342 through 350?

11 A. Yeah.

12 Q. Which includes also your resume?

13 A. Yes, it does. 350 I don't have identified
14 as such. I understand it is an article from The
15 Wall Street Journal, but I do have a copy of that.

16 Q. Okay. Thank you, Mr. Klein. And if I
17 were to ask you the same questions that are posed
18 to you in your prefiled supplemental rebuttal
19 testimony, would your answers be the same?

20 A. Yes, they would.

21 Q. Do you have any corrections or additions
22 to the testimony, Mr. Klein?

23 A. I have none at this time.

24 MR. GUERRERO: Your Honor, we would offer
25 OTP/MDU Exhibits 341 through 350.

1 JUDGE WAHL: Including 341A?

2 MR. GUERRERO: Including 341A, which I
3 presume is Mr. Klein's summary.

4 JUDGE WAHL: Right. Ms. La Seur?

5 MS. LA SEUR: No objection.

6 JUDGE WAHL: Mr. Binek?

7 MR. BINEK: No objection.

8 JUDGE WAHL: OTP/MDU Exhibits 341 through
9 350, inclusive, are each received.

10 Q. (MR. GUERRERO CONTINUING) Mr. Klein, did
11 you prepare a short summary of your testimony?

12 A. Yes, I do. I have a short PowerPoint
13 presentation and some remarks to accompany it.

14 Q. Okay. And, Mr. Klein, I believe the
15 Commissioners and the judge and the parties have a
16 copy of that exhibit. Ordinarily we would be
17 having it on the screen, as well, but we don't have
18 that this morning, so if you could just let the
19 Commissioners know what page you're on as you turn
20 the page of your PowerPoint presentation, that
21 would be helpful.

22 A. I will do so.

23 Q. Go ahead, please.

24 A. Okay. Thank you for this opportunity to
25 present to the Commission. If we start with slide

1 number 2, I'll introduce my testimony.

2 My testimony addresses the concept of risk
3 in selecting the proper type of electric generation
4 resources. We've heard testimony so far that
5 warned of potential future greenhouse gas
6 regulations, cost escalation and construction and
7 other types of concerns that might apply to Big
8 Stone II.

9 My testimony addresses the significant
10 risk that would result if you don't construct Big
11 Stone II station. In short, tradeoffs are
12 involved, and if we simply don't like some
13 potentially adverse effects of one alternative,
14 that should never really suggest that the
15 alternative is great. In this case the decision
16 not to construct Big Stone II would likely lead to
17 increased reliance on natural gas fuel generation
18 either as a primary source or a backup fuel supply
19 or as power purchased from the pool. However,
20 natural gas prices are currently much higher than
21 coal and could potentially go higher, and gas
22 prices are also far more volatile than coal prices.
23 Because of this, regions that have more coal-fired
24 power in their generation mix tend to have more
25 stable power rates.

1 My testimony looked at several aspects of
2 these energy prices and price volatility with a
3 particular focus on natural gas market. This
4 looked at historical fuel prices, longer-term
5 energy price forecasts, international trends and
6 trends within the Midwest ISO. Each of these
7 examinations confirmed the greater volatility of
8 natural gas prices and, therefore, its greater
9 price risk relative to coal.

10 With the rapid growth of liquefied natural
11 gas, or LNG, natural gas is transitioning from what
12 had been a regional or national commodity into a
13 commodity that's now traded on world markets much
14 like petroleum has long been. Oil and gas prices
15 have been, and I suspect to remain, far more
16 volatile than coal prices reacting dramatically to
17 events around the world. In a world market it's
18 important to note that a supply disruption anywhere
19 can affect prices everywhere. On the other hand,
20 coal prices tend to be based much more on domestic
21 factors and are generally far less volatile than
22 oil and natural gas prices.

23 If we turn to slide number 3, we can see a
24 compilation of price forecasts for natural gas and
25 can see how it's worsened over the last few years.

1 What I've done in this chart is I've used
2 projections made by the Department of Energy's
3 Energy Information Administration. Each year they
4 prepare an annual energy outlook, which year is
5 noted as AEO where they look at the outlook for 10
6 to 30 years into the future.

7 What I did here, I went back to the
8 outlooks they began preparing back in 1998, and
9 then for each year since then what was the Energy
10 Information Administration projecting future
11 natural gas prices to be in 2010, 2015, and so on
12 out into the future.

13 If we look at the four lowest lines on
14 that graph, we'll see that they represent the
15 forecast that EIA made back in 1998 to 2001 and
16 they're all kind of clustered together and fairly
17 low priced. (Unintelligible)

18 JUDGE WAHL: I'm sorry. Mr. Klein.

19 THE WITNESS: Yes.

20 JUDGE WAHL: We're having difficulty
21 hearing you. We're getting some kind of
22 disturbance from your end of the phone. Are you
23 using a speakerphone, sir?

24 (Discussion had off the record.)

25 JUDGE WAHL: Mr. Klein, this is Al Wahl

1 again. Let's try again.

2 THE WITNESS: Okay. Can you hear me more
3 clearly now?

4 JUDGE WAHL: Yes, I think we -- at least
5 at this point.

6 THE WITNESS: Okay. I had you on the
7 speakerphone, which usually works fine, but the
8 technology doesn't always behave as nicely as we
9 would like sometimes. I apologize.

10 JUDGE WAHL: All right. If you might, I
11 think, begin again with the reference to your graph
12 on slide 3.

13 THE WITNESS: Okay. I will do so.
14 Beginning with slide 3, what I've done here is I've
15 compiled a series of projections, basically a
16 retrospective, of what the Department of Energy
17 Energy Information Administration had forecast over
18 the last 10 or 11 years of doing forecasts. Each
19 year they do an annual energy outlook that projects
20 their long-term projections over the next 10 to 30
21 years.

22 What I did here, I showed the projected
23 price for natural gas delivered to electric
24 utilities, a U.S. average. Each line represents
25 the forecast they made in a different year, so the

1 very bottommost line is identified as AEO 1998. It
2 means that at the beginning in 1998 they thought
3 that the gas price forecast would be about \$3 a
4 million Btu in 2010, increasing slightly over time.
5 In fact, we see that for the first four years they
6 did that, they all clustered at a fairly tight band
7 and at a low level, and this reflected a view that
8 natural gas was domestic, abundant and cheap.

9 Real world developments have forced
10 changes to that view. And what we see is that
11 beginning at about 2002 and every year since then,
12 the forecast of future gas prices have become
13 higher and -- progressively higher. Future prices
14 now are somewhere between half again and twice what
15 they had forecast just a few years back. It's too
16 early to say what they will forecast when they do
17 AEO 2009, but we know that their oil price forecast
18 for this year had a future trend around \$60 a
19 barrel, so at hundred-dollar-plus oil, we can
20 imagine how the gas price forecast will look next
21 year.

22 The volatility of gas prices is also high.
23 It's gotten more extreme. If we turn to slide
24 number 4, we will see two charts, one on top of the
25 other. What I've done here, I've charted historic

1 data for natural gas and coal prices delivered to
2 electric utilities since 1990 on a monthly basis.
3 The top chart shows the average monthly prices that
4 were delivered, and it's got two lines. The black
5 line represents coal prices -- delivered coal
6 prices to utilities, and it does show a slight rise
7 in recent years from a little over a dollar to
8 \$1.50, up closer to \$2 a million Btu. There's
9 relatively little month-to-month variation seen in
10 that.

11 The natural gas prices are the ones shown
12 in red, and they show both a much higher overall
13 increase over time as well as some fairly wild
14 swings in month-to-month prices. The bottom half
15 of that slide focuses on the month-to-month
16 variation. It just take one month's price and
17 subtracts it from the previous month's price to get
18 an increase or decrease over the month. And what
19 we see are the natural gas prices showing enormous
20 volatility, in particular since 2000. There's
21 several months where the changes in natural gas
22 prices on average have been more than a dollar a
23 million Btu from the previous month.

24 Now, interestingly, this graph also shows
25 the monthly changes in coal prices. Those are

1 shown in black, but you have to look very close
2 because they're barely discernible from the zero
3 line.

4 If we turn to slide number 5, we get a
5 feel for how the world markets are beginning to
6 change natural gas. In this graph we see the
7 future sources of natural gas for the U.S. will
8 increasingly come from overseas LNG and play an
9 increasingly important part in our overall supply
10 mix. Up until the 1990s, our gas supply was mostly
11 domestic production. It accounted for more than 90
12 percent of what we used, and pipeline imports from
13 Canada and Mexico comprised most of the rest. But
14 more recently these imports from Canada and Mexico
15 have been declining, and their outlook is for
16 continued decline according to EIA and other
17 sources. Instead, it's projected that LNG from
18 overseas sources will be growing rapidly and
19 projected decline in domestic production and
20 pipeline imports. So from almost no share of the
21 market at all, LNG will rapidly pass 10 percent and
22 become more important.

23 So in this growing market for LNG on the
24 world basis, who holds the cards? That's what
25 slide 6 tries to show. It's a map of proven gas

1 reserves around the world. Now, if we look at
2 natural gas reserves by country, we would see that
3 the U.S. is actually ranked sixth in the overall
4 world rankings on proven gas reserves. The U.S.
5 has a little bit more than 3 percent of the
6 planet's proven reserves. The other nine countries
7 in the top ten list are Russia, Iran, Qatar, Saudi
8 Arabia, Abu Dhabi, Nigeria, Algeria, Venezuela and
9 Iraq. These other nine countries, let's just say
10 several of whom are at best reluctant business
11 partners with the U.S., collectively hold gas
12 reserves that account for over 75 percent of the
13 world's total.

14 Now, importantly, who's not on that list?
15 We don't have on this list for either oil or gas
16 China, India, Japan or western Europe. They're not
17 among the large holders of oil and natural gas
18 reserves. So we can begin to appreciate how global
19 competition for these fuels between the consuming
20 nations and this handful of oil- and gas-rich
21 countries will continue to underlie international
22 trade and security concerns.

23 This volatility in natural gas prices
24 creates price risk for electricity generators. If
25 we turn to slide number 7, we can see a little

1 example that for illustration, if instead of
2 building coal at Big Stone II, we had 500 megawatts
3 of natural gas combined cycle that was built and
4 operated. If that were the alternative, each
5 change in gas prices of only one penny per million
6 Btu would change the annual fuel cost by about
7 \$280,000 each and every year. And if future
8 natural gas prices were uncertain by a dollar per
9 million Btu or more, which we've seen in the
10 historic data frequently happens just in a single
11 month, then total annual cost for a gas alternative
12 could vary by tens of millions of dollars.

13 Higher fuel prices mean higher costs for
14 generating power and higher rates for the
15 customers, and for the customers, income that's
16 diverted into paying higher power bills is no
17 longer available to meet other household needs.
18 For the North Dakota population that would be
19 served by Big Stone II, two additional factors
20 exacerbate the sensitivity to fuel prices and
21 volatility and suggest that their potential impacts
22 might be greater than what a national average
23 calculation would indicate.

24 First, most of the counties that would be
25 served by Big Stone II in North Dakota have a lower

1 average household income than national average.
2 Lower-income families already are spending a
3 greater percentage of their household earnings to
4 cover energy-related expenditures and are
5 particularly vulnerable to increased energy costs.
6 A second factor that households in North Dakota and
7 other states that would be served by Big Stone II
8 have a higher than average consumption of natural
9 gas and petroleum outside of their electricity use.
10 This is largely related to winter heating needs
11 that are more extreme in this region than other
12 parts of the country.

13 So if natural gas is also used instead of
14 coal at Big Stone II, then the overall fuel supply
15 diversity is reduced from a household perspective.
16 If natural gas supplies are constrained or see
17 price spikes, households would then be hit twice,
18 once in the direct consumption of fuel and, again,
19 in their use of natural gas-fueled electricity.
20 Hence, coal use would not only be less volatile as
21 a power generation source, but would help to
22 moderate price spikes in other part of a family's
23 energy budget.

24 That's my prepared slides. Thank you for
25 this opportunity to address the Commission. I

1 would be happy to take any questions.

2 MR. GUERRERO: Thank you, Mr. Klein. Your
3 Honor, we would tender him for examination.

4 JUDGE WAHL: Ms. La Seur.

5 MS. LA SEUR: Thank you.

6 **CROSS-EXAMINATION**

7 **BY MS. LA SEUR:**

8 Q. Mr. Klein, can you hear me?

9 A. I can hear you fine. Can you hear me?

10 Q. Yes. I'm Carrie La Seur. I'm the
11 attorney for the intervenors, Dakota Resource
12 Council and Mark Trechock. And I would like to
13 begin with a few questions about your resume.

14 Your degrees are in urban studies and
15 business administration; is that correct?

16 A. That's correct.

17 Q. No degrees in economics; correct?

18 A. Economics is a large part of the business
19 administration course. I am not an economist by
20 degree, no.

21 Q. No degrees in power engineering?

22 A. No. I took engineering courses at MIT,
23 but my degree was in urban studies and with a focus
24 in systems analysis.

25 Q. Any direct employment history in the

1 electric power industry?

2 A. No. When I finished business school, I
3 entered a consulting firm and have been doing
4 consulting the last 30-something years.

5 Q. Do you have any peer-reviewed
6 publications?

7 A. I'm sure there's several that are on my
8 resume that are peer reviewed.

9 Q. Could you name just one?

10 A. Give me a moment here. A couple that deal
11 with carbon capture and storage were peer reviewed.
12 I apologize for taking a moment here. I have not
13 been asked that question in a long time. I believe
14 the one -- let's see, it's on page 36, Global
15 Climate Change: The Road to Kyoto, starting at
16 line 20, that was published in EM Magazine, I
17 recall that as being peer reviewed.

18 Q. Okay. Are you familiar with the Center
19 for Energy and Economic Development?

20 A. Yes, I am. I believe they've changed
21 their name recently.

22 Q. And what is the new name?

23 A. ACCCE. I think it's something like
24 American Coalition for Clean Coal Energy.

25 Q. Clean Coal Electricity, I believe.

1 A. Okay.

2 Q. And is that a coal industry lobbying
3 group?

4 A. It's coal, electric power and railroads
5 are their primary funders.

6 Q. And are they a client of yours?

7 A. They have been in the past.

8 Q. You say that you are currently working
9 with electric utilities and others to identify and
10 implement voluntary programs to reduce greenhouse
11 gas emissions; correct?

12 A. Correct.

13 Q. And you say that you led the U.S. portion
14 of a multinational team to create a climate change
15 strategy for the City of Donetsk, Ukraine,
16 including identifying potential greenhouse gas
17 mitigation activities and the associated cost and
18 effectiveness; correct?

19 A. Yes. That project was led with an
20 environmental think tank, the Center for Clean Air
21 Policy.

22 Q. And do these greenhouse gas reduction
23 activities in which you are currently involved
24 include advocating for coal plants that don't
25 capture or store greenhouse gases?

1 A. No, I don't advocate. I'm not an advocate
2 myself. I consider myself an analyst here.

3 Q. And do you acknowledge that Big Stone II
4 will increase regional greenhouse gas emissions by
5 millions of tons annually?

6 A. Yes.

7 Q. Can you point to any evidence in the
8 record that supports your assertion that North
9 Dakota's participation in the Midwest Independent
10 System Operator, MISO, exposes it to a natural gas
11 price volatility risk much larger than its actual
12 percentage of generation?

13 MR. GUERRERO: Excuse me. Objection.
14 Other than his own testimony?

15 MS. LA SEUR: That's right.

16 THE WITNESS: Some of my testimony built
17 off of testimony that was submitted in Minnesota by
18 Dr. Raquel and I used one of his exhibits as part
19 of mine.

20 Q. (MS. LA SEUR CONTINUING) And so on which
21 exhibit do you base that testimony?

22 A. In my testimony that shows up as -- one
23 moment here. No. I apologize. That did not make
24 it into my final testimony here. That was part of
25 my Minnesota testimony.

1 Q. Your testimony is also that North Dakota
2 has higher than average natural gas consumption in
3 nonelectric residential energy uses; correct?

4 A. Correct.

5 Q. I direct your attention to your Exhibit
6 OTP/MDU 347 --

7 A. Yes.

8 Q. -- and the North Dakota-specific
9 statistics on nonelectric energy, the column
10 labeled natural gas. What is the North Dakota
11 average per household, according to this chart for
12 natural gas?

13 A. On that chart it shows 37.3.

14 Q. And what does it show the national average
15 to be?

16 A. 41.6.

17 Q. Okay. On what evidence do you base your
18 statement that North Dakota has higher than average
19 natural gas consumption in nonelectric residential
20 energy uses then?

21 A. Can you point to the line in my testimony
22 on that? What page are we looking at?

23 Q. First of all, at page 4, lines 21 and 22
24 you say, "Nonelectric residential energy uses in
25 North Dakota indicate higher than average natural

1 gas and petroleum consumption."

2 A. Yes. Okay. That was referencing the sum
3 of natural gas and petroleum, which if you then
4 turn back to page 347 -- I'm sorry -- Exhibit 347,
5 North Dakota had the none -- the natural gas and
6 petroleum, the sum of those two would have been
7 71.9 in contrast to a U.S. of 64.7.

8 Q. So every place in your testimony where you
9 say that North Dakota residential consumers have
10 higher than average natural gas and petroleum
11 consumption, and I can point you to several places,
12 we should read that as petroleum consumption only,
13 correct, or the two together, not natural gas?

14 A. I was referring to the two together in
15 that case.

16 Q. Okay. And everywhere you refer to impacts
17 from natural gas price volatility alone, we should
18 understand those impacts as being lower than
19 average for North Dakota residential consumers;
20 correct?

21 A. Could you repeat that question?

22 Q. Everywhere you refer to impacts from
23 natural gas price volatility, we should understand
24 those impacts as being lower than average for North
25 Dakota residential consumers?

1 A. Not necessarily. There's a strong
2 correlation between natural gas prices and
3 petroleum prices, so there is a substantive reason
4 for grouping those together for this purpose.

5 Q. In spite of the fact that the natural gas
6 figure is lower than average?

7 A. For 2001, which is the last year that
8 particular data was there, it was approximately 10
9 percent lower than average. It may have changed
10 since then. The data is not available.

11 Q. Wouldn't North Dakota consumers be better
12 off protected from the price volatility of both
13 coal and natural gas for home heating?

14 A. I'm sorry. I'm not sure I understood that
15 question.

16 Q. The question is, wouldn't North Dakota
17 consumers be better off protected from the price
18 volatility of both coal and natural gas for home
19 heating?

20 A. Better protected how?

21 Q. Be better off protected.

22 A. I'm still not --

23 Q. That they would not be economically better
24 off if they were insulated from the price
25 volatility of coal and natural gas.

1 A. I think as a general statement lower
2 volatility provides a greater sense of protection,
3 and so if you want to then take that to North
4 Dakota consumers, I think that would generally be a
5 better thing to have less price volatility.

6 Q. Did you consider in your comments the
7 potential for expanded use of any currently
8 available technologies such as ground source heat
9 pumps that would have that protective effect?

10 A. No, I did not.

11 Q. At page 5 of your testimony you refer to
12 Big Stone II adding diversity for the participants.
13 In what way does Big Stone II add diversity?

14 MR. GUERRERO: Tell us where that's at,
15 please.

16 MS. LA SEUR: At page 9 -- sorry. At page
17 5, line 9.

18 THE WITNESS: That came from some Big
19 Stone II materials. I believe I'd seen those on
20 the descriptive materials on the plant.

21 Q. (MS. LA SEUR CONTINUING) So you're
22 accepting the applicants' statement that Big Stone
23 II adds diversity?

24 A. In that case, yes.

25 Q. And if I told you that Big Stone II will

1 increase coal dependence on the MDU system from 72
2 to 78 percent, would you consider that an increase
3 in diversity?

4 A. For that system, itself, that would be an
5 increase in coal dependence. As I said elsewhere
6 in my testimony, when you look at the energy use of
7 the population to be served, it would be viewed as
8 a decrease -- or an increase in diversity.

9 Q. An increase in diversity?

10 A. For the population as a whole, yes.

11 Q. And to what population do you refer there?

12 A. The household consumers.

13 Q. How do you define "diversity," Mr. Klein?

14 A. Diversity is having alternatives and a mix
15 of different resources such that in this case if
16 you have changes in one thing, you have
17 alternatives that you can shift to.

18 Q. Turning to page 6, the paragraph beginning
19 at line 4, you conclude, I believe, that demand-
20 side management savings are less applicable to Big
21 Stone II than they would be for reducing peak
22 loads. Does this mean that the energy efficiency
23 gains that you reference in this same paragraph
24 would be relevant substitutes for the claimed
25 generation need?

1 A. I think it's silent on that. I think it
2 is correct that most of the DSM is most cost
3 effective when peak loads are reduced because the
4 data supports that that's where most of the efforts
5 have been levied nationally. Energy efficiency
6 measures, it would depend on what types the
7 measures were. Some energy efficiency measures are
8 aimed at peak loads, others are aimed at loads more
9 dispersed throughout the day.

10 Q. And moving down to lines 21 and 22 on page
11 6 where you say that regions with more coal-fired
12 power in their generation mix usually have more
13 stable electric power rates. Is it your testimony
14 then that decreases in fuel diversity in favor of
15 coal are economically desirable?

16 A. There are two steps in your argument. I
17 would say that having more coal in the mix leads to
18 more stable power rates. To say that more -- and
19 then the second part would be in your statement, I
20 think, more stable power rates are economically
21 desirable, and that would have to reflect other
22 types of tradeoffs and considerations.

23 Q. Mr. Klein, in your opinion, is there a
24 point at which dependence on coal becomes an
25 economic risk rather than a desirable increase in

1 diversity?

2 A. Oh, I'm certain there must be, but I don't
3 think there's a single point that's applicable to
4 all regions at all times.

5 Q. Would you say that 94 percent dependence
6 on coal constitutes an economic risk?

7 A. I've not done any studies on that. Again,
8 if I were, I would want to know what alternatives
9 they might have in terms of access through power
10 pools and other arrangements.

11 Q. You testify about coal price risks at the
12 top of page 7, lines 2 through 6. In commenting on
13 risk associated with coal pricing, do you consider
14 coal delivery costs?

15 A. All of my numbers here have referred to
16 coal delivered price -- delivered cost basis.

17 Q. Delivered cost. Page 12 then, lines 12
18 and 13, referring to your statement that "energy
19 conservation can slow the growth in electric power
20 demand, but such energy conservation is unlikely to
21 fully offset the need for new baseload power
22 generation." Is there evidence included with your
23 testimony to support this statement or provide any
24 nuance to it?

25 A. In my Minnesota testimony on one of those

1 we looked at that and my own experience. I began
2 doing work in energy and environmental around the
3 time of the first Arab oil embargo in the 1970s
4 when there was a call to energy conservation and
5 the easy way, and since then we've seen probably
6 half again the demand for electricity as there was
7 at that time. For the Minnesota testimony we
8 looked at -- at the government data, some of it
9 supplemented by the ACCCE, that looked at the
10 effectiveness of energy conservation programs and
11 utilities state by state. And it found that in
12 some states there was as much as 8 percent of the
13 load had been saved cumulatively through DSM
14 measures, but for most of them it was 4 percent or
15 less and cumulative after 10 or 20 years of effort.
16 I don't want to belittle that. I think it's
17 significant and there's probably opportunities to
18 do more, but in the population and the economy
19 that's growing load at 1 percent or more a year,
20 the evidence has been that that has not been enough
21 to offset overall growth in demand.

22 Q. And, again, you're just speaking from
23 memory and your own impressions as opposed to
24 evidence you've entered into the record?

25 A. For the North Dakota case that evidence

1 has not been in the record. It was entered into
2 Minnesota.

3 Q. On page 14 you list the other top 10
4 countries along with the United States in gas
5 reserves and raised, again, the issue of what
6 foreign sources of LNG imports might be. Doesn't
7 your own exhibit --

8 MR. GUERRERO: What page are we on? I'm
9 sorry.

10 MS. LA SEUR: I'm referring first to page
11 14, lines 9 and 10, the list of other major LNG
12 sources worldwide.

13 MR. GUERRERO: Thanks.

14 MS. LA SEUR: And then referring to Mr.
15 Klein's Exhibit OTP/MDU 350, at page 3.

16 Q. (MS. LA SEUR CONTINUING) Doesn't your own
17 exhibit, Mr. Klein, say that production is expected
18 to grow by 30 percent worldwide in the next two
19 years and the United States is likely to avoid the
20 need to increase imports?

21 A. Exhibit 350 is what, The Wall Street
22 Journal article?

23 Q. Right.

24 MR. GUERRERO: Could you point him to that
25 particular --

1 Q. (MS. LA SEUR CONTINUING) I'm referring to
2 the last paragraph on page 3 of your exhibit,
3 running over on to page 4.

4 A. Is that the one where it says, Michael
5 Stoppard, a senior director at CERA, predicts world
6 LNG supply will grow by 30 percent in the next two
7 years --

8 Q. That's the one?

9 A. -- making more chilled gas available for
10 the U.S.?

11 Q. Correct.

12 A. What was your question on that?

13 Q. My question is if your testimony that we
14 will experience increased risk from LNG import
15 increases from unstable parts of the world isn't
16 contradicted by your own exhibit.

17 A. I don't see a contradiction there at all.

18 Q. What about the part where Chesapeake Chief
19 Executive Aubrey K. McClendon says that U.S. gas
20 prices will be between 7 to \$10 per million BTUs
21 and avoid the need to increase imports?

22 A. Okay. That part seems to be a shorter --
23 well, it's unclear from that what time period he's
24 referring to. He's referring to higher gas prices
25 than we've historically had up until recently, and

1 that has stimulated some drilling inactivity.
2 Those facts I think were taken into account when
3 the Energy Information Administration did its
4 forecast that show U.S. production at best holding
5 steady over the longer term and LNG continuing to
6 fill a bigger role in our supply mix. As for the
7 following statement that the consultant at CERA, he
8 predicts world LNG supplies will grow by 30 percent
9 in the next two years, I think that's a reasonable
10 estimate. I have no reason to think that it's not
11 a well-founded estimate. And what it shows is that
12 the world is in fact moving from a natural gas
13 market that had once been regional or national in
14 scope to one that is becoming increasingly
15 international.

16 Q. At page 16, lines 17 and 18 of your
17 testimony, you seem to be testifying -- in the
18 question you say, "How will the region's increasing
19 dependence on natural gas for power generation
20 affect customers of Big Stone II?" What evidence
21 is there in the record that this region is indeed
22 increasing its dependence on natural gas for power
23 generation?

24 A. I base this on material I read from Xcel
25 Energy and their plans to increase gas use and

1 others in the MISO area. It was entered into the
2 Minnesota testimony. It's not specifically
3 referenced here.

4 Q. And based on statements by one utility,
5 you said?

6 A. Xcel Energy in particular, and then
7 there's also a review of MISO data.

8 Q. At pages 4, 5 and 17, for example, you
9 refer repeatedly to a scenario in which the
10 proposed 500 megawatts of Big Stone II are replaced
11 by 500 megawatts of natural gas with all the
12 attendant price and rate consequences. Can you
13 point to any testimony offered by any party in this
14 docket that suggests that this would or should be
15 the case?

16 MR. GUERRERO: I'm sorry. I guess -- do
17 you understand the question, Mr. Klein?

18 JUDGE WAHL: He can answer that he doesn't
19 understand it.

20 THE WITNESS: I think she's asking me if
21 someone else has specifically said that there would
22 be 500 megawatts of natural gas combined cycle. As
23 I tried to phrase it here, I was saying there is a
24 specific proposal on the table to have 500
25 megawatts of coal-fired power represented by Big

1 Stone II, and it might look at what happens if you
2 don't build Big Stone II, you need something. For
3 calculation purposes I said if it were the case
4 that all of this were natural gas combined cycle at
5 various heat rates and capacity factors, this would
6 be the impact. Clearly, if you can find other ways
7 to replace that need for capacity that Big Stone II
8 would have provided, less of that would remain to
9 be filled by natural gas.

10 Q. (MS. LA SEUR CONTINUING) Would an energy
11 efficiency, conservation, DSM, wind and natural gas
12 alternative to Big Stone II be less risky than the
13 100 percent natural gas alternative you've
14 considered here?

15 A. I'm not sure I understand what you mean by
16 "less risky."

17 Q. Less economic risk.

18 A. Well, that would entail calculations of
19 both economics and feasibility. I have not done
20 those calculations and I'm not sure others have.

21 Q. You're not able to give a general
22 impression of the relative risk of a pure natural
23 gas generation alternative as compared to a
24 combination of energy efficiency, conservation,
25 demand-side management, wind and natural gas in a

1 portfolio?

2 A. It depends on how much could be done. I
3 mean, I know that on a national basis wind and
4 solar currently account for 2, maybe 3 percent -- a
5 few percent at most of our national energy mix, and
6 energy efficiency and DSM programs are reported
7 another couple percent. So to assume that they can
8 fill a large gap, again, it may be possible, but
9 there's not a lot of evidence that that's been done
10 on that scale before, so that to me would be a
11 risk.

12 Q. Did you consider in your comments the fact
13 that North Dakota produces approximately 1 percent
14 of the United States' annual natural gas?

15 A. No, I did not.

16 Q. Did you consider in your comments the fact
17 that North Dakota is one of only two states that
18 produce synthetic gas?

19 A. No, I did not.

20 Q. Is there any genuine risk that North
21 Dakota will be importing LNG from Saudi Arabia or
22 Qatar any time soon?

23 A. I think they will be affected by it,
24 certainly. There's a -- as I said, in a world
25 market, activities that affect supply anywhere

1 affect prices everywhere. To see that, the U.S.
2 imports approximately none of its petroleum from
3 Iran, and has not for quite a long time, but events
4 that happen there very much affect the price at the
5 pump in North Dakota.

6 Q. Mr. Klein, aren't you just setting up a
7 bogeyman with this scary idea of a 500-megawatt
8 natural gas plant powered by LNG direct from Iran?
9 Is that in any way realistic?

10 MR. GUERRERO: Objection, argumentative.

11 MS. LA SEUR: That's withdrawn.

12 JUDGE WAHL: I don't think so. Overruled.

13 THE WITNESS: Can you point to where I
14 said there would be a 500-megawatt plant supplied
15 by LNG from Iran? I don't think North Dakota
16 really offers good ports for LNG tankers to come
17 into, but it is very much the case that activities
18 that affect LNG, our gas markets around the world
19 will increasingly affect the price of natural gas
20 everywhere.

21 MS. LA SEUR: That's all I have.

22 JUDGE WAHL: Mr. Binek.

23 MR. BINEK: Thank you.

24

25

CROSS-EXAMINATION

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BY MR. BINEK:

Q. Mr. Klein, my name is William Binek. I'm counsel for the Public Service Commission advocacy staff. And I seem to be losing my voice here.

COMMISSIONER CLARK: You asked a lot of questions yesterday.

Q. (MR. BINEK CONTINUING) What, in your opinion, is the more efficient use of natural gas, use for home, commercial and industrial heating or use as a fuel for electric power generation?

A. I think the former, home heating and cooking purposes. We've seen an evolution in this thinking over time, and if you've been in this business long enough, you see old wisdom and truisms come in and out of favor. Back in the 1970s when I began consulting, there were shortages of natural gas and the federal government passed acts making it basically illegal to burn natural gas in much of our generating capacity mix. The statement was that at this time for combined cycles, natural gas is too valuable to use to boil water to spin turbines. And then gas supply increased and improved and prices became low during the '80s and '90s to the point where it became a

1 very attractive fuel for power generation and was
2 seen as the answer to coal and the problems that
3 were perceived to go with that fuel. And that
4 worked up until it didn't. And in the early part
5 of this decade we fell back into the problem of
6 natural gas price spikes, fuel shortages and
7 terrible instability in the markets which brought
8 about a wave of proposed coal plants. And which
9 way it will go again I can't say, but it is clear
10 that during this period the evolution in the supply
11 part of the natural gas has made it more into a
12 world market, and that won't change. So overall
13 what that says is that as an electric power fuel,
14 natural gas can be thought of more and more like
15 petroleum in terms of its price instability and
16 supply vulnerability. Does that make that a good
17 use for power plant fuel? My current thinking is
18 not as much as it used to be.

19 Q. In your rebuttal testimony, and, I'm
20 sorry, I didn't note where it was, but you stated
21 that natural gas and petroleum prices have
22 increased sharply in recent years and now the
23 incremental cost relative to coal is far higher
24 than levels seen in the 1990s. Would you please
25 explain what you mean by that statement?

1 A. Okay. I apologize if that phrasing was a
2 bit obtuse. And you might be able to see it on the
3 oil presentation I gave if you look at slide number
4 4, the top part of that. What I mean by
5 "incremental cost" is the relative cost of gas
6 above and beyond what coal is. And we can see from
7 the top graph that during most of the 1990s, that
8 was usually somewhere between 50 cents and \$1.50 a
9 million Btu, a fairly low margin. What we see now
10 is that the difference -- the spread of prices
11 between coal and oil is now 2 to \$4 a million Btu.
12 And so that was my reference as to what the
13 incremental cost meant.

14 Q. Okay. I thought that was what you were
15 talking about, and it's the spread, the spread is
16 increasing?

17 A. The spread is increased. That's a better
18 phrasing.

19 Q. In your answers -- questions from Ms.
20 La Seur and your answers, you talked about Big
21 Stone II, if it's not built, and then talked about
22 alternatives. What -- what, in your opinion -- and
23 maybe you've already answered this. What, in your
24 opinion, would be the alternatives that would be
25 available to MDU and Otter Tail?

1 A. Well, I think that in theory there are a
2 lot of alternatives. In practicality, it will
3 largely boil down to natural gas as being a large
4 part of the answer. I have a certain sympathy for
5 any electric company trying to make the resource
6 decisions now because these are very turbulent
7 times both in terms of cost and fuel supply. But,
8 you know, time doesn't stand still and decisions
9 need to be made. If you don't build coal,
10 traditionally the sources have been nuclear, large
11 hydro and natural gas. Energy efficiency, that
12 saved a couple of percent of our total load, and I
13 would hope there could be more. Wind and solar
14 saved perhaps a few percent of our load. I hope
15 there could be more. But it's largely been coal,
16 gas, hydro and nuclear. And I don't think hydro
17 and nuclear offer much near-term potential for a
18 company that needs resources, which brings it down
19 to coal and gas as the proven alternatives.

20 Q. Did you listen in to Mr. Schlissel's
21 testimony yesterday?

22 A. I heard some of it. There was sometimes
23 problems on the Internet connection, but I heard
24 much of it.

25 Q. Did you hear Mr. Schlissel's responses to

1 my questions regarding imports of natural gas?

2 A. I'm trying --

3 Q. I'm sorry.

4 A. I'm not -- I may have.

5 Q. Okay. Basically my recollection is with
6 regard to the imports from Canada and Mexico, I
7 wasn't clear from Mr. Schlissel whether he was
8 indicating that the imports are projected to
9 decline or whether they're currently declining.
10 Can you tell me what the situation is? Are imports
11 currently on the decline from Canada and Mexico?

12 A. If we look at my presentation, slide
13 number 5, and focus on Canada because that's where
14 more the net imports are coming from, they peaked
15 early this decade and have started falling and they
16 continue to fall, and the projections are that they
17 will continue to fall.

18 Q. Okay. And Mexico --

19 A. Mexico, slight decreases over time, but,
20 no, the sum of the two -- and it's important to
21 look at the sum because those are pipeline imports.
22 Those are not as vulnerable to being rerouted as
23 LNG. With LNG, once it's on the water, you know,
24 if your vessel is coming up the Atlantic Ocean, it
25 can just as easily hang a right and go to Europe as

1 it can turn to the left and come to the U.S., and
2 that's what creates the world market.

3 Q. Did you also hear the discussion between
4 me and Mr. Schlissel concerning LNG imports and
5 where they were coming from? My recollection is he
6 listed a number of countries that export LNG, but I
7 don't believe that he answered specifically where
8 the imports into the United States are coming from.
9 Can you clarify that?

10 A. Most of our imports of LNG today -- and,
11 again, we're still in the early years of this --
12 has been from Trinidad in the Caribbean, smaller
13 amounts from Egypt, and there are projects underway
14 to take from some other countries. However, as the
15 market develops, which specific countries it comes
16 from becomes increasingly less important, much as
17 it would in the oil market. You would expect over
18 time in a well-functioning market that the sources
19 of LNG with the lowest transportation costs would
20 be the ones that would serve the U.S. and the
21 others would serve other markets, but prices will
22 change and markets will rapidly adjust to changes,
23 and we've already seen evidence in a fairly
24 significant decline in LNG imports into the U.S. as
25 some of the suppliers find higher prices in other

1 countries.

2 Q. When I asked Mr. Schlissel about
3 uncertainties and risks for higher fuel prices and
4 supply disruptions with natural gas-fired
5 generation versus coal-fired generation, my
6 recollection of his response to supply disruptions
7 was that there were risks of supply disruptions for
8 both fuels. What, in your opinion, is the most
9 likely cause of disruptions to coal supply and,
10 also, what is the most likely cause of disruptions
11 to natural gas supply, and which poses the greatest
12 risk?

13 A. Well, coal supply, the disruptions are
14 more -- almost entirely domestic and not so much
15 market related. We have a very abundant supply of
16 coal in this country. The reference is often made
17 that the U.S. is the Saudi Arabia of coal. Mining
18 costs over time, not necessarily on a year-to-year
19 basis, tend to revert in a competitive market to
20 production -- or prices tend to track production
21 costs. We do get short-term changes in that, up or
22 down, as market demands change. You can have
23 transportation interruptions, but those are usually
24 fixable. So to me coal supply disruptions are a
25 short term, and by "short term" I mean weeks to

1 months, in a couple of cases to a couple years.

2 The natural gas supply disruptions are
3 several types and stretch over different periods of
4 time. As we've seen in the case of oil, you can
5 have actual embargoes where countries withhold
6 supply or you can have turmoil in countries where
7 production gets shut down. You can have natural
8 disasters that affect production much like what we
9 saw in the Gulf after Katrina hit. You can have
10 disruptions in shipping such as a large part of the
11 world's oil passes through four strategic straits,
12 such as the Straits of Hormuz in the Middle East.
13 Those are all vulnerable. You've got longer-term
14 disruptions that tie in more with economic and
15 political power. Western Europe, which is far more
16 dependent upon imported gas than we are at present,
17 has already been seeing in recent years political
18 pressures being applied by Russia and others who
19 control the supply. In the very long term you have
20 economic problems just from the massive outflows of
21 the money to pay for all this stuff. If you look
22 at the amount of oil and gas being purchased from
23 the OPEC countries and the forecast of what that
24 is, the prices, we're looking at somewhere between
25 500 billion dollars a year and over a trillion

1 dollars a year going from the developed countries
2 to the oil and gas owners. You have to think that
3 that poses some sort of long-term instability with
4 that kind of massive wealth transfer.

5 Q. Thank you. You provide in your Exhibit
6 346 a map that depicts the location of world oil
7 and natural gas reserves. It suggests that all of
8 North America has 264 trillion cubic feet of the
9 world's proven gas reserves out of 6,044 trillion
10 cubic feet worldwide. If my math is right, that
11 represents about 4 percent of the world's supply.
12 Do you agree?

13 A. Those are the -- yes, with your
14 calculation, yes.

15 Q. Do you know what share of the world's coal
16 supply is in North America?

17 A. I know it's a large amount. I think the
18 U.S. has more proven coal reserves than any other
19 country, but I don't have those statistics at my
20 fingertips.

21 Q. Would you be willing to provide a map
22 similar to the oil and gas reserves that would show
23 worldwide coal reserves?

24 A. I can do that. I can certainly provide a
25 table that shows by country and continent those

1 amounts. I would be happy to do so.

2 Q. Do you have any idea what --

3 JUDGE WAHL: Mr. Binek, I'm sorry. That's
4 going to be a late-filed exhibit?

5 MR. BINEK: Yes.

6 JUDGE WAHL: And, Mr. Guerrero, help me.
7 Let me see.

8 MS. DANIELS: PSC 7.

9 JUDGE WAHL: Say again.

10 MS. DANIELS: PSC 7.

11 JUDGE WAHL: No. It will be --

12 MS. DANIELS: Okay. Well, that's how we
13 numbered from yesterday.

14 COMMISSIONER CRAMER: Yeah, I wondered
15 about that.

16 MR. GUERRERO: 350 --

17 MS. DANIELS: 351.

18 MR. GUERRERO: No, I think we've got --
19 we've got some late-filed exhibits.

20 MS. DANIELS: They're not OTP/MDU. 351 is
21 next -- OTP/MDU.

22 MR. GUERRERO: Subject to check, Your
23 Honor, I believe it would be OTP/MDU 351.

24 JUDGE WAHL: All right. OTP -- for the
25 record, OTP/MDU Exhibit 351, a table of North

1 American Coal reserves -- no, no, of world coal
2 reserves.

3 MR. BINEK: Right.

4 JUDGE WAHL: Right. All right. You may
5 proceed, Mr. Binek.

6 Q. (MR. BINEK CONTINUING) Do you have any
7 idea what share of North America's coal reserves
8 are in North Dakota?

9 A. The lignite reserves are expansive. For
10 many years, not in the last few years, much of my
11 work dealt with modeling coal supply and
12 transportation in a national context, and North
13 Dakota is one of the very largest.

14 Q. Can you provide an exhibit that would show
15 what North Dakota's share of coal reserves is?

16 A. I can do a similar table to what I did
17 before, but showing it state by state.

18 MR. BINEK: Thank you.

19 COMMISSIONER WEFALD: Doesn't that vary,
20 though, by the BTUs that's produced by the coal?

21 MR. BINEK: I'm just talking about coal
22 reserves.

23 COMMISSIONER WEFALD: Coal reserves. All
24 right.

25 JUDGE WAHL: OTP -- that's OTP/MDU 352.

1 You may proceed, Mr. Binek.

2 MR. BINEK: I have no further questions.

3 JUDGE WAHL: All right. Questions by the
4 Commission. Any Commissioners have any question?

5 COMMISSIONER WEFALD: I have no questions
6 for this witness.

7 JUDGE WAHL: Commissioner Cramer.

8 **EXAMINATION**

9 **BY COMMISSIONER CRAMER:**

10 Q. Mr. Klein, this is Kevin Cramer. I'm on
11 the Commission. And I have actually quite a few
12 questions for you, and I'll try to make sure they
13 relate to this case, although I have to tell you
14 that I'm always fascinated by this topic of the
15 tight supply/demand balance in the world's natural
16 gas supply. I was especially amused by your chart
17 3 -- or slide 3, the chart where you overlay the
18 various gas price forecasts by annual energy
19 outlooks. I'm a regular reader of the EIA's annual
20 energy outlooks and I've always been amused by the
21 many disclaimers they now have to use every year to
22 explain why they were wrong last year.

23 Do you have any idea -- well, let me first
24 go to slide 6, the proven world gas reserves. Mr.
25 Binek just asked about it. You show 264 trillion

1 cubic feet of natural gas reserves on the North
2 American continent. Are those -- I know you call
3 them provable. How recoverable are those 264
4 million -- or trillion? I'm sorry.

5 A. I was going to say, these are defined
6 somewhat differently at different sources. This
7 particular one is the Oil & Gas Journal which
8 compiles it. I know the groups like the Energy
9 Information Administration and International Energy
10 Administration also do compilations, although they
11 do try and coordinate.

12 Proven relates to a level of geologic
13 certainty that it is actually there and can be
14 recovered with certain -- within certain ranges of
15 what existing technologies will allow. Those are
16 definitions that change over time. And if we are
17 to look at a similar map of where the proven oil
18 reserves are, we would see that just in the last
19 few years Canada went from almost nowhere to second
20 or third in the world because the definitions and
21 the economics of their tar sand recovery has
22 elevated them into the top tier of reserve owners
23 for oil.

24 Q. Well, in North Dakota we're becoming very
25 familiar with that, as well, with regard to a large

1 play of oil embedded in shale. Well, if we can't
2 categorize it by how recoverable or how
3 economically recoverable it is, are you familiar
4 with -- I'm thinking now of specifically
5 continental U.S. natural gas supplies, proven
6 reserves and public policies that relates to its
7 recoverability. In other words, we have a lot of
8 sensitive areas, I believe, where there is natural
9 gas reserves. Are you familiar with any of that?

10 A. I've not done specific studies. I know
11 that there are a number of areas in national parks
12 and protected areas and offshore areas that are
13 believed to hold substantial amounts that are off
14 limits to production.

15 Q. Let me ask you this. Do you know how much
16 natural gas is consumed in the United States
17 annually, roughly?

18 A. I don't have those at my fingertips now.

19 Q. Does 22 or 23 trillion cubic feet sound
20 roughly right?

21 A. Sounds roughly right.

22 Q. Well, if 23 trillion cubic feet is
23 consumed in the United States and you show proven
24 reserves of 264 trillion cubic feet on the North
25 American continent, if my math is right, that tells

1 me, with just no growth in demand, that we're
2 probably not much beyond ten years' supply in the
3 continental U.S. Does that sound feasible?

4 A. That's often the case with oil and gas.
5 And, again, it gets back a little bit to the way in
6 which we define "proven." It's frequently the case
7 that as development of a reservoir progresses,
8 additional resources which were not either known or
9 accessible before become accessible, and so I would
10 not take that as ten years and the tank is dry.

11 Q. Okay.

12 A. But it does suggest in broad terms a much
13 less, much shorter-lived asset base than we would
14 find for coal.

15 Q. Since we're on the issue of supply, how
16 familiar are you with the process of converting
17 coal to natural gas or, for that matter, liquid
18 fuels?

19 A. There are technologies that have long been
20 the case. Gasification is part of the IGCC
21 process, itself. Liquid fuels from coal are also a
22 question -- are also doable. Issues deal with cost
23 and the environmental impacts, and if we are
24 thinking about a future carbon-constrained world,
25 the CO2 impacts of those processes have to be taken

1 into consideration.

2 Q. Does it stand to reason that if natural
3 gas continues to be consumed at greater -- higher
4 levels for things like generating electricity, that
5 we'll need to look at more gasification of coal
6 while the proven reserves continue to decline?

7 A. I think if you're thinking of gas as
8 somewhat of a supply-constrained commodity, which
9 is perhaps okay --

10 Q. Sure.

11 A. -- and certainly if we think it used
12 petroleum -- well, let me first take petroleum as
13 just a hypothetical. If instead of burning coal at
14 Big Stone II, you constructed a petroleum plant, it
15 would be unlikely to increase the production of
16 petroleum around the world.

17 Q. Mm-hmm.

18 A. Instead, the petroleum that's burned at
19 Big Stone II would ripple through the world markets
20 and then somewhere some other application is not
21 going to burn petroleum, which may in turn just
22 burn coal or natural gas or do without. So if we
23 then apply that to a natural gas situation --
24 instead of burning coal at Big Stone II, you
25 construct a natural gas unit, you ask the same

1 question, are natural gas supplies around the world
2 going to increase to meet this demand, and, if not,
3 are you merely just shifting the emissions around
4 in the use?

5 Q. Good question. Do you have any data or at
6 least an educated sense of what impact the growing
7 demand on natural gas for the generation of
8 electricity in the last decade or so has had on the
9 price?

10 A. It's a good question. It's a harder
11 answer to tease out of the data. Clearly, a lot of
12 the demand growth in the 1990s and the early part
13 of this decade came from the electric power sector.
14 In fact, some of the industrial uses of natural gas
15 have actually declined over this time.

16 Q. Has some of that industrial use decline
17 been the result of industry moving out of the
18 United States because of rising natural gas prices?

19 A. There's several factors that play, of
20 which that would be one of them. I think we're
21 seeing broad trends of sort of the
22 deindustrialization of much of our economy. As
23 some of the energy-intensive industries move
24 overseas, you know, iron and steel, aluminum,
25 several others, are increasingly moving overseas,

1 that's due to a lot of factors, not necessarily
2 natural gas prices except in those cases where some
3 countries have local supplies of natural gas that
4 are very inexpensive for them to use and very
5 costly for them to make available to the world
6 market.

7 Q. In other words, it's easier and less
8 expensive to move an industry to some place that
9 has -- that has cheap, easy natural gas than it is
10 to move cheap natural gas to the United States?

11 A. That's true, but there's more to it, I
12 believe.

13 Q. I'm sure there is.

14 A. There's also labor cost, other
15 environmental considerations. There are a lot of
16 factors that go into that.

17 Q. Getting back to this issue of diversity of
18 fuel for generating electricity, electricity seems
19 to have the luxury of being able to be generated by
20 a number of ways, and in this case here we're down
21 to a couple that are truly economical it seems.

22 Are there processes or products that utilize
23 natural gas either in the manufacturing process or
24 literally as a part of the product that don't have
25 a diverse alternative? I'm thinking of, for

1 example, in North Dakota fertilizer.

2 A. Well, a lot of natural gas is used in
3 process. You've got fertilizer. You also have the
4 petrochemical industry, broadly speaking, as a
5 major user of natural gas as a feedstock. Those
6 industries have had a very hard time lately dealing
7 with the higher cost of their inputs.

8 Q. And so I guess I'm then thinking about an
9 earlier statement you made and I guess there's been
10 other testimony that references the preciousness of
11 this finite resource and how we utilize it, and
12 that's probably more of my own editorial comment
13 than it is a question.

14 I was going to ask you about LNG ships
15 changing direction in the middle of the Atlantic,
16 but you got around to that. Have you heard
17 literally of situations where that has occurred?

18 A. There were a couple of articles just in
19 the last couple of weeks making reference to that,
20 you know, the suppliers where allowed will seek out
21 the highest price. A lot of the early LNG
22 activities here, as this industry begins to develop
23 on a world market, have a lot of long-term fixed
24 contracts because --

25 Q. Sure.

1 A. -- the cost of building the facilities at
2 either end are so substantial that they don't want
3 to leave much to chance. But as the market grows
4 and there becomes a little bit of excess capacity
5 on production and consumption side that can seek
6 out the higher market, you very rapidly begin to
7 move into a world market where there's value in
8 playing the spot market.

9 Q. I'll just close with this question, and
10 since the EIA has such a hard time forecasting much
11 beyond next month, it's probably hard for you to
12 answer this, but do you have any sense of what the
13 new -- I call it the new floor for gas prices might
14 be?

15 A. No, I don't. And I have a lot of sympathy
16 for EIA. There's actually quite -- there are quite
17 a number of good and competent people there and
18 they do a lot of their forecasts in terms of
19 quantities are good. Prices are inherently
20 volatile and they entail more than just hard
21 numbers. They entail political things, weather,
22 accidents. They haven't done a particularly good
23 job, but no one else has, either.

24 COMMISSIONER CRAMER: Yeah, I don't mean
25 to -- my characterization of EIA is not to

1 criticize them. I think they do fine work. It's
2 just more of an illustration of the situation we
3 find ourselves in today. That's all I have. Thank
4 you.

5 JUDGE WAHL: Commissioner Clark.

6 COMMISSIONER CLARK: Thank you.

7 **EXAMINATION**

8 **BY COMMISSIONER CLARK:**

9 Q. Good morning, Mr. Klein.

10 A. Good morning.

11 Q. My name is Tony Clark. I'm one of the
12 three members of the Commission. I would like to
13 turn to Exhibit 347, which is the average per-
14 household energy consumption chart.

15 A. Yes, I'm there.

16 Q. Okay. There were a number of questions
17 about this, and previously in our hearing we had
18 some data related to household use of electricity
19 for heat versus natural gas for heat, and my
20 questions are going to relate to this general
21 topic. First, just specifically on the chart, do
22 you know, does petroleum -- does that column
23 include propane?

24 A. I believe it does.

25 Q. Okay. It would also include gasoline?

1 A. Yes. This would be petroleum of all
2 forms.

3 Q. Okay. Would -- let me state it this way.
4 It would seem to me that the most relevant point
5 that we could get to would be not total statewide
6 average usage of different commodities, but the
7 more relevant point would be actually the customers
8 of the two companies that we have before us today.
9 Would you agree?

10 A. I think in general I would agree. It
11 might depend upon the specific question we're
12 trying to solve.

13 Q. Okay. Here's why I ask. My guess is --
14 and I don't know that this has been in any chart at
15 all, and you can tell me if my thinking is off here
16 or not. But my guess is that for customers of
17 Otter Tail Power and for MDU, who are the customers
18 that we're here today dealing with, that they are
19 probably much more dependent on natural gas as a
20 heating source than any of the charts that we've
21 seen so far, and here's why I make that statement.
22 And, again, correct me if you think I'm wrong. The
23 customers of Otter Tail and MDU are primarily
24 people who live in cities or small towns. These
25 are not companies that serve primarily rural

1 populations, and yet North Dakota is a fairly rural
2 state. We have a lot of customers who do live in
3 the countryside and they tend to be people who are
4 customers of rural electric cooperatives and they
5 tend to not have natural gas service, and we don't
6 build distribution lines to farms. They tend to
7 use electricity for heat or propane. Is it
8 probably likely that if we were to just focus in on
9 customers of MDU and Otter Tail, that their
10 dependency on natural gas and their usage of
11 natural gas would be far, far higher than the
12 statewide average?

13 A. Your reasoning sounds perfectly fine to
14 me. If that data were available, that would be, I
15 guess, my hypothesis of what I would expect to see.

16 Q. Okay. And have you seen any of that data
17 that would allow us to get to that specific
18 question of the usage of natural gas by customers
19 of Otter Tail and MDU, or I guess the other data
20 that we saw which didn't -- which would be useful
21 to be updated perhaps is the percentage of
22 customers of those two companies that use natural
23 gas to heat versus electricity to heat?

24 A. No, I have not seen that.

25 Q. Okay.

1 Q. Have you done work in the field of energy
2 conservation?

3 A. I've done work broadly in the area of
4 energy and climate for over 30 years. In our work
5 on the Minnesota hearings a year or two ago, we
6 looked more carefully at a lot of the DSM data that
7 had been reported.

8 Q. Based on your experience in the industry,
9 do you need additional information from which to
10 make that statement?

11 A. I do not. I'm comfortable with the
12 statement as a general principle. And I say that
13 with a heavy heart. I am at best a reluctant
14 supporter of coal in general. I consider myself
15 more of an environmentalist than an energy
16 advocate. But in 30-something years of working in
17 this area and hearing calls about energy
18 conservation and how easy and cheap it is, that
19 somewhat flies in the face of the historical record
20 which shows our consumption going up year after
21 year. So I do believe that there are more
22 opportunities to do more, but the history has not
23 been that satisfied, and I think to assume at this
24 time it will be different is in some ways to have a
25 strategy that's based more on hope than on

1 experience.

2 MR. GUERRERO: No further questions.

3 JUDGE WAHL: Followup, Ms. La Seur.

4 **RECROSS-EXAMINATION**

5 **BY MS. LA SEUR:**

6 Q. Mr. Klein, do you believe that stringent
7 measures are necessary for the United States to
8 deal with the challenge of global warming?

9 A. As a personal matter, yes, I do.

10 Q. And do you believe that constructing new
11 coal plants that do not capture and store CO2 is a
12 viable part of such stringent measures?

13 A. I do a lot of work with the Department of
14 Energy on their carbon capture and storage program,
15 and I know there are a lot of efforts underway to
16 develop, demonstrate and hopefully implement the
17 technology. It's not there yet. There are a lot
18 of people that are focused very hard on doing that.
19 And, again, as a personal view, I think if we
20 cannot develop that, we're in serious trouble
21 because I don't think there are enough alternatives
22 that can get you from where we are now to where we
23 want to be without use of coal in an
24 environmentally acceptable way.

25 Q. So is it your testimony that if we can't

1 develop capture and storage technology, we should
2 just carry on building the same plants we've always
3 built?

4 A. It's always a question of the alternative.
5 You know, it's not a situation of I don't like this
6 and, therefore, if I can't have this, everything is
7 going to be fine. It's a question of what then.
8 And that's been the focus of my testimony here,
9 where I think that the "what then" will largely
10 relate to natural gas and what that implies.

11 Q. And so you don't believe that natural gas
12 is an option; correct?

13 A. Oh, I certainly believe it's an option. I
14 believe it's an option that has its own
15 consequences and risks, and it may also be the case
16 that in a world market simply substituting natural
17 gas for what would have been coal at Big Stone II
18 may result in shifts within the world market that
19 means more coal elsewhere. It may not be a net
20 savings.

21 Q. But you don't offer any alternatives to
22 pulverized coal or natural gas; correct?

23 A. I'm not sure I know what you mean by
24 "offer."

25 Q. Your testimony is merely about the

1 problems with natural gas; correct? You don't
2 offer any alternative to the present proposal or a
3 natural gas alternative?

4 A. I've not submitted a resource plan of any
5 type.

6 MS. LA SEUR: Right. Thank you.

7 JUDGE WAHL: Mr. Binek, any followup?

8 MR. BINEK: No.

9 JUDGE WAHL: Any followup questions by the
10 Commission? Mr. Kuntz.

11 MR. KUNTZ: Would Commissioner Clark like
12 us to submit a late-filed exhibit, at least for
13 MDU, showing our average residential consumption
14 for electricity and natural gas? If you would like
15 that, I think we can put that together.

16 COMMISSIONER CLARK: If that would be
17 possible, yes. I understand that MDU's natural gas
18 service territory significantly overlaps with Otter
19 tail's electric service territory, so it may be --
20 do we get in trouble if we have more than one
21 exhibit, MDU can provide for its own company, those
22 towns that you serve both?

23 MR. KUNTZ: That's all we can do.

24 COMMISSIONER CLARK: Would it be accurate
25 to then just add Otter Tail's on top of that and

1 would you get the apples-to-apples?

2 MR. KUNTZ: If I understood what the
3 Commission was getting to, is, you know, what's an
4 average residential customer in North Dakota, you
5 know, use -- consumption of natural gas. I'm not
6 sure that the difference is much -- average use in
7 Minot versus Bismarck is a whole lot different.

8 COMMISSIONER CLARK: Right.

9 MR. KUNTZ: So in terms of comparing a
10 chart, because I assume the chart in Mr. Klein's
11 testimony is kind of an average household, so, you
12 know -- which if you have a number of households
13 that don't have natural gas, that dilutes your
14 average consumption. So if you want to determine
15 for those customers who have natural gas what's
16 their averages consumption, I think our chart would
17 show that as a comparison to the statewide average.

18 COMMISSIONER CLARK: Sure, I think that
19 would be helpful. If you would be willing to
20 submit that, that would be --

21 MR. KUNTZ: We can do that as MDU No. --

22 MS. DANIELS: 223.

23 MR. KUNTZ: We can probably ask Otter Tail
24 to do a joint exhibit showing their average
25 electric use, our average electric use and then the

1 average natural gas use for Montana-Dakota, and
2 then we have all three of them.

3 COMMISSIONER CLARK: Sure. That would be
4 acceptable. Thank you.

5 MR. KUNTZ: That would be OTP/MDU 353.

6 JUDGE WAHL: All right.

7 MR. KUNTZ: And that's for residential
8 customers.

9 COMMISSIONER CLARK: Let me ask, is it
10 possible to have that be on an MMBtu basis? Do you
11 understand why I ask that?

12 MR. KUNTZ: Sure.

13 MR. GUERRERO: You can convert it to make
14 it to a --

15 MR. KUNTZ: You should be able to make
16 that conversion.

17 COMMISSIONER CLARK: Okay. So we're not
18 comparing decatherms with kilowatt-hours. Okay.
19 Thank you.

20 JUDGE WAHL: Anything further from the
21 Commission? If not, let's be in recess until
22 10:50.

23 MR. GUERRERO: And we're done with Mr.
24 Klein?

25 JUDGE WAHL: Yes. I'm sorry. Mr. Klein,

1 I've rather overlooked you. Thank you very much,
2 Mr. Klein.

3 THE WITNESS: You're quite welcome.

4 (Recess taken at 10:38 a.m. to 10:53 a.m.)

5 JUDGE WAHL: Mr. Binek.

6 MR. BINEK: Thank you. Are we going to
7 wait for Commissioner Clark?

8 JUDGE WAHL: No.

9 COMMISSIONER WEFALD: I think we can go
10 ahead.

11 MR. BINEK: The Commission advocacy staff
12 calls Terry Deason.

13 JUDGE WAHL: Mr. Deason, I recall you from
14 the previous hearings for these matters, and I have
15 personal knowledge that you are advised and
16 informed regarding perjury. Accordingly, Mr.
17 Deason, you understand that your testimony
18 continues under oath and subject to penalties of
19 perjury?

20 THE WITNESS: Yes, I do.

21 JUDGE WAHL: Mr. Binek.

22 **TERRY DEASON,**

23 being previously duly sworn, was examined and
24 testified as follows:

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DIRECT EXAMINATION

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BY MR. BINEK:

Q. Please state your name for the record.

A. My name is Terry Deason.

Q. And where are you employed?

A. I am employed by the firm of Radey Thomas Yon and Clark in Tallahassee, Florida. My address is 301 South Bronough Street, Suite 200, Tallahassee, Florida 32301.

Q. And what is your position with the firm?

A. I'm a consultant with the firm -- a nonlawyer consultant with the firm.

Q. And you stated you have testified previously in this proceeding. Did you prepare the supplemental direct testimony in this case that's identified as Exhibit PSC 4?

A. Yes, I have.

Q. And are there any corrections or additions that need to be made to your testimony?

A. I am unaware of any at this time.

Q. If I ask you the questions today that are in your testimony, would your answers be the same?

A. Yes, they would.

MR. BINEK: Your Honor, I offer PSC Exhibit -- or Exhibit PSC 4.

1 MR. GUERRERO: No objection.

2 JUDGE WAHL: Mr. Guerrero? Ms. La Seur?

3 MS. LA SEUR: No objection.

4 JUDGE WAHL: Exhibit PSC 4 is received.

5 Mr. Deason, could I ask you to maybe pull your mike
6 forward a little bit. I've got the volume --

7 COMMISSIONER CLARK: It's off.

8 JUDGE WAHL: Oh, it's off. That's the
9 reason.

10 THE WITNESS: Wow, that makes a
11 difference.

12 JUDGE WAHL: It does indeed.

13 Q. (MR. BINEK CONTINUING) Mr. Deason, would
14 you please give a summary of your testimony?

15 A. Yes. I reviewed the applicants'
16 supplemental case for an advance determination of
17 prudence for a downsized version of Big Stone II.
18 I read and analyzed all of the applicants' prefiled
19 supplemental testimony and analyzed all supporting
20 cost information and assumptions. I submitted 62
21 data requests to the applicants and analyzed their
22 responses to those data requests. I also reviewed
23 current developments in the electric industry and
24 recent regulatory actions which could have a
25 bearing on the prudence of producing with Big Stone

1 II.

2 My review of the applicants' cost inputs
3 and assumptions focused on six areas: One, wind
4 inputs and assumptions; two, construction or
5 capital inputs and assumptions; three, operating
6 inputs and assumptions; four, fuel inputs and
7 assumptions; five, financial inputs and
8 assumptions; and, six, other matters.

9 My review concludes that the applicants
10 have demonstrated that a downsized version of Big
11 Stone II is a cost-effective means to meet their
12 need for additional baseload generation subject to
13 conditions and additional explanation and
14 clarification.

15 I conclude that Big Stone II, like any
16 pulverized coal unit, has certain risks, but
17 numerous strategic advantages. The areas needing
18 additional explanation and clarification include
19 wind production tax credits and fixed costs
20 associated with wind, capital cost, fuel forecast
21 and escalations, project financing and
22 environmental compliance costs. These are
23 summarized on pages 26 and 27 of my prefilled
24 supplemental testimony.

25 I conclude my testimony by reiterating the

1 five conditions I suggested in my earlier testimony
2 and the need for the applicants to continue
3 monitoring potential carbon dioxide regulations
4 with an updated confirmation of Big Stone II's cost
5 effectiveness prior to the commencement of
6 construction. This concludes my summary.

7 Q. Have the applicants sufficiently addressed
8 the areas you identified as needing additional
9 clarification and explanation?

10 A. Yes, they have, but there are three areas
11 that I think I need to expand upon at this time.
12 First is the area of Big Stone II's capital cost
13 and the use of EPRI scaling formulas. My concern
14 was that there could have been an understatement of
15 the capital cost for Big Stone II with it being
16 downsized. Mr. Rolfes addressed this both in his
17 testimony and in responses to data requests, but he
18 did not have specific costs for the downsized
19 components. He did answer questions from Mr. Binek
20 in this regard. He indicated that there is an
21 ongoing obligation to monitor these costs when the
22 time comes for construction and to review the bids
23 associated with that and, if necessary, report
24 significant changes to the Commission. I believe
25 with that understanding, my concern is addressed.

1 The second area that I wish to touch upon
2 at this time is capital costs for a combined cycle
3 gas turbine plant. There was an apparent disparity
4 in the assumptions used by Mr. Heidell and Mr.
5 Greig. Mr. Heidell assumed \$1,795 per kW for a
6 combined cycle plant. This included \$545 of
7 transmission and \$128 of IDC and \$1,122 per kW for
8 the capital cost. And this was for a 120-megawatt
9 plant. Mr. Greig in his busbar cost analysis
10 assumed a cost of \$674 per kW, and this was for a
11 \$500 -- I mean, a 500-megawatt plant.

12 Mr. Heidell explained this in his rebuttal
13 testimony. It further came out in testimony at
14 hearing that Mr. Morlock used in his IRP model
15 numbers that were consistent with those used by Mr.
16 Heidell, and I note that Mr. Schlissel in answer to
17 cross-examination questions supported a number
18 closer to that used by Mr. Heidell. I conclude
19 that Mr. Greig's use of a low number was just a
20 very conservative measure on his part and I think
21 the results are justified.

22 The third area I wish to touch upon at
23 this time is the assumptions used by Mr. Heidell
24 concerning the extension or nonextension of the
25 production tax credits for wind generation. In

1 scenarios 1 and 2 he assumed that the production
2 tax credits would expire 1-1-2013, and in those
3 scenarios he also utilized a wind capacity factor
4 of 52 percent. In scenarios 3 and 4 he changed the
5 capacity factor to 38 percent, which I have no
6 objection to. I think it is a reasonable change
7 for scenarios 3 and 4. But in scenarios 3 and 4 he
8 also assumed the expiration of the PTCs to be
9 1-1-2009. Realizing that it's questionable as to
10 when and if the PTCs will ever be renewed or what
11 their termination may be at some future point, I
12 just ask a question concerning the impacts of an
13 assumption of a continuation of the PTC. It's my
14 understanding that Mr. Heidell ran additional runs
15 with the model to answer that question. However,
16 that information was not allowed into the record.
17 I did hear the proffer of Mr. Heidell when he took
18 the stand and also heard an answer to a redirect
19 question, which I think is in the record, which
20 indicated that those runs resulted in no change in
21 the results, that being that Big Stone II was still
22 the preferred alternative. So given that
23 situation, I believe that that concern has been
24 adequately addressed, as well.

25 That concludes my discussion of the

1 explanations and clarifications.

2 MR. BINEK: Thank you. The witness is
3 available for cross-examination.

4 JUDGE WAHL: Mr. Guerrero.

5 MR. GUERRERO: Thank you, Your Honor.

6 **CROSS-EXAMINATION**

7 **BY MR. GUERRERO:**

8 Q. Good morning, Mr. Deason.

9 A. Good morning.

10 Q. I just have just a very few number of
11 questions, some of which you've already answered.
12 If you could go to page 16 of your testimony, Mr.
13 Deason, lines right about 10.

14 A. Yes.

15 Q. In response to the question about carbon
16 dioxide regulation on the price of natural gas, you
17 say at line 10, "This would certainly place upward
18 pressure on prices," then goes on to say, "In fact,
19 I believe this is already being manifested to some
20 degree by the number of coal units which have been
21 canceled and partially replaced by additional
22 gas-fired generation." Did I read that correctly?

23 A. Yes, you did.

24 Q. Did you have any particular units in mind
25 in that statement?

1 A. Well, I am aware of a number of coal units
2 which have been canceled or deferred, but being
3 from Florida, I'm familiar with the situation
4 involving Florida Power & Light Company and the
5 decision by the Florida Commission to not approve
6 the Glades project and I'm aware of actions that
7 FPL has taken subsequent to that decision.

8 Q. What are those actions?

9 A. Well, FPL has identified a number of
10 measures that they're taking. There's a reemphasis
11 on energy conservation. There's an emphasis on
12 trying to bring on some renewable projects, but, in
13 all honesty, there's not a great deal of renewables
14 available in Florida, but there are some
15 smaller-scale projects involving wind FPL is
16 currently engaged in and, coincidentally, incurring
17 a lot of siting problems with that endeavor in
18 Florida. But the largest response to that has been
19 a further dependence on natural gas-fired
20 generation and a very significant development in
21 the repowering of existing nuclear units and the
22 planned additions of two nuclear units at existing
23 sites within Florida.

24 Q. Thank you. You're aware that Florida
25 Power & Light has an affiliate company, FPL Energy?

1 A. Yes, I'm aware of that.

2 Q. Do you know -- could you tell the
3 Commission generally what they do?

4 A. Yeah. FPL Energy is an unregulated
5 subsidiary of FPL Group. They develop energy
6 projects throughout the country and maybe even
7 internationally, but I'm not absolutely sure of
8 that. But I know that they -- depending on the
9 latest statistics and that sort of thing, they have
10 been indicated to be the largest owner of wind
11 production in the continental United States. Now,
12 whether they still have that standing at this point
13 I'm not sure, but they are also engaged in solar
14 projects, primarily thermal solar projects.

15 Q. But it would be fair to say, would it not,
16 that FPL Energy knows a little bit about renewable
17 energy?

18 A. Yes, I think that they do. They have been
19 successful both in the planning, the deployment and
20 the management of those units, and my understanding
21 is they have been profitable for the company.

22 Q. And you mentioned that Florida Power &
23 Light's response has been primarily to look at
24 natural gas and nuclear, correct, in response to
25 the Glades denial?

1 A. Yes, that has been the -- for baseload
2 generation to meet their needs, that has been the
3 primary response.

4 Q. Turn to page 19, Mr. Deason, please. At
5 the top of that page you say, "However, Otter
6 Tail's assumptions are more conservative and
7 provide a greater assurance that a capital-
8 intensive generating unit such as Big Stone II is
9 truly the more cost-effective alternative." There
10 you're referencing most likely Otter Tail's 12
11 percent assumed for planning purposes return on
12 equity?

13 A. That is correct.

14 Q. Could you explain why that's -- you
15 described that as more conservative?

16 A. Well, first of all, let me clarify that I
17 do not disagree with Mr. Heidell's use of the 11
18 percent return on equity. But it is obvious that
19 the use of a higher return on equity for cost
20 modeling purposes, there's a larger cushion there
21 that you're assured that Big Stone II would be the
22 most cost-effective alternative, and it's
23 particularly significant for Big Stone II being
24 such as a capital-intensive project, and if you're
25 assuming a higher return on equity for planning

1 purposes, there is a larger cushion there that it
2 is going to be the most cost-effective alternative.

3 If there is a rate proceeding -- if Big
4 Stone II is built and there is a future rate
5 proceeding to put it into rate base, the Commission
6 would be free at that time to determine what is the
7 appropriate return on equity. If the Commission
8 were to select a return on equity less than 12
9 percent than the assumed 12 percent, well, that
10 just enhances the cost-effectiveness assumptions
11 for planning purposes of Big Stone II.

12 Q. And so the higher for planning purposes
13 the ROE, sort of the more conservative it is for
14 planning purposes to evaluate the cost
15 effectiveness of that particular project?

16 A. That is correct.

17 Q. Go to page 7, Mr. Deason, please. And at
18 line -- end of line 10 through 13 there you talk
19 about "Mr. Heidell concludes that the potential for
20 off-system sales is a benefit for proceeding with
21 Big Stone II, but that Big Stone II is not
22 dependent on off-system sales to make it the choice
23 of their expansion plan." Did I read that
24 correctly?

25 A. Yes, you did.

1 Q. And you agree that Montana-Dakota is not
2 dependent on off-system sales for purposes of a
3 least-cost expansion?

4 A. They're not depending upon that, but they
5 did make the calculations, and the projected sales
6 are substantial, in my opinion.

7 MR. GUERRERO: I don't have any further
8 questions, Your Honor.

9 JUDGE WAHL: Ms. La Seur.

10 MR. GUERRERO: Thank you, Mr. Deason.

11 **CROSS-EXAMINATION**

12 **BY MS. LA SEUR:**

13 Q. Good morning, Mr. Deason.

14 A. Good morning.

15 Q. Are you familiar with the recent decisions
16 by the Virginia State Corporation Commission on
17 Dominion Virginia Power's Wise County pulverized
18 coal plant proposal?

19 A. I have -- only to the extent that I have
20 read some press accounts that have been included in
21 a clipping service that my firm subscribes to.

22 Q. Are you aware that the Virginia Commission
23 set a cap on rate-recoverable costs for the plant?

24 A. I seem to recall that that was included in
25 the press accounts, but I don't have detailed

1 information of that.

2 Q. Do you have any recollection what the
3 Virginia Commission did with regard to return on
4 equity?

5 A. No, I do not.

6 Q. Would you consider it reasonable for this
7 Commission to set a cap on rate-recoverable costs
8 for Big Stone II?

9 A. No, I do not. I believe that it's the
10 obligation of a utility company -- here two
11 utilities that are working in tandem -- to put
12 together to the Commission the most cost-effective
13 alternative and have the Commission review that,
14 and then it's the obligation of the utility to
15 proceed -- if it is approved, to proceed in the
16 most prudent way possible to minimize costs, but at
17 the same time to meet schedules and to construct a
18 prudent plant that will operate efficiently and
19 hopefully in the long term. Cost recovery should
20 be -- should be subject to a review at the
21 conclusion of that process with no predisposition
22 one way or the other. I know that this is a
23 preprudence determination, but I know that there
24 was a reference earlier in the proceeding to a
25 blank check. I don't think that this is a blank

1 check. I think the obligation is squarely on the
2 utilities to proceed in a prudent manner, and they
3 will have to justify the actual costs that are
4 incurred in the construction of this plant in a
5 future base rate proceeding.

6 Q. So do you believe it's prudent to approve
7 rate recovery for Big Stone II without any limits
8 on capital costs, future carbon costs or fuel
9 supply costs?

10 A. I don't believe this Commission is
11 approving rate recovery at this point. They're
12 just approving that they have reviewed all of the
13 filed information and that if it is approved that
14 the Big Stone II project is the correct course of
15 action to take and that construction should proceed
16 in a prudent and cost-effective manner and that
17 there will -- before rates are increased to reflect
18 the investment in Big Stone II, there will be an
19 obligation on the utilities to justify the costs
20 that they have actually incurred to that point.

21 Q. Whatever those costs turn out to be?

22 A. Whatever those costs turn out to be, and
23 if the costs are excessive, then I would anticipate
24 that this Commission would take the appropriate
25 action to reduce rate base so that ratepayers are

1 not subject to costs which are inappropriate or
2 imprudent.

3 MS. LA SEUR: That's all.

4 JUDGE WAHL: Questions by the Commission?

5 COMMISSIONER WEFALD: Yes.

6 JUDGE WAHL: Commissioner Wefald.

7 **EXAMINATION**

8 **BY COMMISSIONER WEFALD:**

9 Q. I have been interested in this proceeding
10 that most of the testimony, both prepared before
11 the hearing occurred and at the hearing, has
12 centered around the comparing of alternatives
13 between Big Stone II and whether it should be wind,
14 gas, or whether it should be another source, and I
15 understand that a lot of study has gone into that,
16 and I appreciate that, but when I thought about
17 this hearing last fall, the main question that I
18 thought we were going to be addressing was whether
19 this -- this is still a prudent investment to move
20 forward with given the downsizing of the plant from
21 630 to 5 -- from 630 to perhaps 500 --

22 COMMISSIONER CLARK: Susan, I think your
23 mike is off.

24 Q. (COMMISSIONER WEFALD CONTINUING) -- from
25 630 megawatts down to 500 megawatts and then

1 whether -- because of that reduction in size,
2 whether the costs would still be reasonable for
3 customers, and yet I get to the end of the hearing
4 and that has barely been addressed at all to my
5 mind, so I'm going to ask you this question. The
6 only place I found testimony about this is in Mr.
7 Greig's testimony, and he said on page 11 of his
8 testimony -- and if you need to see it, I'll be
9 glad to give it to you -- a copy.

10 A. Yes, I have it in my briefcase.

11 Q. All right. That would be fine if you want
12 to grab that. It is the applicants' supplemental
13 direct testimony.

14 A. Is it rebuttal or --

15 Q. It is the -- no, it's their first round of
16 testimony they submitted on March 10th of 2008.
17 And I don't know what it is in the new book of
18 exhibits, but in the book of exhibits that I have,
19 it's under tab 13 and it's page 11.

20 A. Okay. I believe I'm with you.

21 Q. All right. And so I'm going to line 13,
22 "What were the specific results reported in your
23 updated analysis?" And then 14, "For the
24 investor-owned utility ownership model, the lowest
25 cost generation alternative was the 630-megawatt

1 supercritical Big Stone Unit II project with an
2 estimated levelized busbar cost of \$73.98 per
3 megawatt-hour over the 2013 to 2032 planning
4 period. The 580-megawatt and 500-megawatt Big
5 Stone Unit II project alternatives followed at
6 \$75.26 per megawatt-hour and \$77.65 per megawatt-
7 hour." So I'm going to compare, using the worst-
8 case scenario then, if it went from 630 megawatts,
9 which was they had anticipated a levelized cost of
10 \$73.98 per megawatt-hour, and it went to the 500-
11 megawatt Big Stone Unit II project at a cost of
12 \$77.65 per megawatt-hour, do you consider that --
13 do you still consider that a reasonable price for
14 customers to pay?

15 A. Yes. I reviewed this information, and I
16 did review it in the context of these updated costs
17 in comparison to other alternatives to show that
18 even though there has been increases due to the
19 downsizing -- increases per megawatt-hour of
20 output, that it was still the most cost-effective
21 alternative, and I would agree with the conclusion
22 that even the downsized plant is still the most
23 cost-effective alternative.

24 Q. So in your mind then, it isn't important
25 for the Commission to think about, well, what if

1 there were more partners still available and this
2 plant could be built at 630 megawatts, whether we
3 should hold out for customers to say to the people
4 involved, we want you to get this back up to 630
5 megawatts so that customers can get this at \$4-and-
6 some cents less per megawatt-hour?

7 A. I think that's an extremely good question,
8 and, yes, I did have questions about that. I do
9 note that there was a question asked during this
10 hearing to Otter Tail, and apparently it was asked
11 to the wrong witness and we did not get an answer,
12 but the question was that -- there was an
13 indication that up to 170 megawatts would be the
14 most cost-effective alternative for Otter Tail, but
15 that they're choosing to participate at a lower
16 level and why was the decision made to participate
17 at a lower level. I can only anticipate as to what
18 the response would be, but we did not get a
19 response to that. And so, yes, that crossed my
20 mind, and I looked at the cost data with the idea
21 that if 170 megawatts were the most cost effective
22 for Otter Tail, that that would increase the -- and
23 with minimal participation from others, that we
24 would potentially be at 580, which is the preferred
25 alternative to 500, and maybe even back up to the

1 630. But I don't have any detailed information. I
2 would suggest that maybe we could get a late-filed
3 exhibit. I couldn't provide that. Management of
4 the company would have to provide that, what was
5 the strategic decision that was made to limit the
6 participation less than what the model indicated
7 was the preferred amount.

8 Q. So that's still a question that you have?

9 A. Well, it's a question of -- well, let me
10 put it this way. My focus was to determine if the
11 downsized units were still cost effective, and I
12 concluded yes.

13 Q. Yes. I understand.

14 A. This is -- another level of a question is,
15 is there a more -- is there a preferred alternative
16 that is even better than the downsized version of
17 Big Stone II, that being a larger version of Big
18 Stone II? I don't have an answer to that. I think
19 it's a very valid question. I think it's a fair
20 question.

21 Q. So would you suggest that I ask that for a
22 late-filed exhibit?

23 A. I would suggest that, yes, ma'am.

24 Q. All right. Would you help me word it?

25 A. Yes, I would.

1 Q. All right. Thank you.

2 A. This would be the premise for the
3 question, and I believe I'm correct in this
4 premise, and if I need to be corrected, I would
5 assume that the response would correct it. It's my
6 understanding that Otter Tail's expansion plan
7 indicated that up to 170 megawatts of Big Stone II
8 would be a cost-effective alternative to meet their
9 baseload generation needs. Given that premise, the
10 question is, why did Otter Tail choose to
11 participate at a lower level of the Big Stone II
12 project given that it was cost justified to
13 participate up to a level of 170 megawatts.

14 JUDGE WAHL: Gentlemen -- counsel, rather,
15 this will be PSC -- late-filed Exhibit PSC 5. No?
16 Didn't we just admit 4?

17 MS. DANIELS: We had two questions from
18 Mr. Binek yesterday for late-filed exhibits that
19 were marked as 5 and 6.

20 JUDGE WAHL: Because I already marked Mr.
21 Deason's as 4. All right. So this is PSC Exhibit
22 7?

23 MS. DANIELS: 7.

24 JUDGE WAHL: Thank you.

25 MR. GUERRERO: Your Honor, could I ask for

1 a clarification?

2 JUDGE WAHL: Certainly.

3 MR. GUERRERO: Did the question also
4 contemplate additional partners or just the
5 increment between 120 to 170 for Otter Tail?

6 THE WITNESS: No, just the additional
7 increment is the purpose of the question. But, I
8 mean, if there's information that could be provided
9 about the potential for new partners, I don't think
10 that having more information is going to be a
11 problem.

12 JUDGE WAHL: All right. Mr. Guerrero.

13 MR. GUERRERO: That's fine.

14 JUDGE WAHL: All right. Further questions
15 from the Commission? Commissioner Wefald?

16 COMMISSIONER WEFALD: No. That's my only
17 question at this time. Thank you.

18 JUDGE WAHL: Commissioner Clark?

19 **EXAMINATION**

20 **BY COMMISSIONER CLARK:**

21 Q. Thank you. Good morning, Mr. Deason.

22 A. Good morning.

23 Q. Welcome back to North Dakota, good to have
24 you here.

25 A. Glad to be here.

1 Q. My question is on page 19 of your direct
2 supplemental testimony and it has to do with the
3 cost of debt, and I think Mr. Guerrero asked about
4 you couldn't conclude that they were inappropriate.
5 I was just wondering if you had any thoughts about
6 the cost of debt given another month to think about
7 it and you see the financial markets and the debt
8 is getting tougher and tougher to get and banks are
9 getting tighter in giving it out. Do you have any
10 thoughts on this 6 and a half percent cost of debt?
11 Is it still within the ballpark of being
12 reasonable?

13 A. I think it's still in the ballpark, but I
14 would think it's probably maybe towards the low
15 end, and I would recognize that Otter Tail assumes
16 7 and a half percent cost of debt in their model.
17 So I take comfort in the fact that their model
18 still indicated that Big Stone II was the preferred
19 alternative and they assumed a higher cost of debt
20 and a higher return on equity, and obviously the
21 return on equity is much more determinative than
22 the cost of debt because of the income tax
23 consequences of return on equity. Income taxes
24 have to be calculated into the models, and we did
25 get confirmation that income taxes were calculated

1 into the models and in a correct manner. So even
2 with a higher return on equity, the income taxes on
3 the equity return and Otter Tail using a 7.5
4 percent cost of debt, their models indicated that
5 it was still the cost-effective -- most
6 cost-effective alternative.

7 Obviously the parties -- the applicants
8 have the burden to go out and to acquire the debt
9 most cost effectively as possible, and they will
10 have the obligation to demonstrate to the
11 Commission that they did engage in that process and
12 the debt that they incurred was the most
13 cost-effective alternative. And they're also
14 assuming a 50-50 split between equity and debt,
15 which I think is a fair assumption to make for
16 planning purposes.

17 When the applicants get to the market,
18 they may find that the most cost-effective and most
19 efficient means of financing this project may be
20 some deviation from the 50-50 debt-to-equity ratio.
21 So interest rates would have an effect upon that,
22 and the riskiness of the project would have some
23 impact upon that, as well. And so there still are
24 opportunities to try to go out and to minimize the
25 cost of capital, but as I expressed in my

1 testimony, there's some factors out there which --
2 particularly with concerns about carbon dioxide
3 regulations that are impacting financing for coal
4 plants. I would note, too, that the Rural
5 Utilities Service I think at this point has made
6 the decision not to provide financing for coal
7 plants at this time. I think that's a temporary
8 measure, but until they get maybe some more
9 information about the impacts of carbon dioxide
10 regulations.

11 So I think your question is very valid. I
12 think that the financing of the project is going to
13 be a challenge, but I think -- I did ask a data
14 request in this regard to the applicants and got
15 assurances that they believe that the project is
16 financeable and financeable on reasonable terms.

17 Q. And separate from the question of the risk
18 that carbon -- potential carbon regulation throws
19 into the financing, the pressures that exist
20 because of turbulence in the financial market, that
21 would exist on any project that a utility would
22 seek to finance; right? I mean, that's separate
23 from Big Stone II. If they chose an alternative,
24 whether it be financing wind turbines or gas plants
25 or anything else, that sort of pressure is going to

1 exist either way; is that correct?

2 A. There is pressure. I mean, there's just
3 general financing pressures which are going to be
4 there for any investment in any new generation,
5 you're correct. I think there's going to be an
6 additional challenge for the coal unit.

7 Q. Sure.

8 A. I had a thought and I think it escaped me.
9 Maybe it will come back to me. But, yes, you're
10 correct, that there would be -- that the challenges
11 would continue to be there for any project. Oh, I
12 know what it was. I was going to say this. I
13 think I covered it in my prefiled supplemental
14 testimony.

15 I think that the investment community
16 takes a degree of comfort in recognizing that there
17 has been a thorough, open process engaged with the
18 applicants and their regulatory bodies when it
19 comes to the construction of a large-scale project
20 such as this. They take comfort in the fact that
21 if a project is approved, that it has gone through
22 the necessary review and screening and that there
23 is a certain amount of -- well, there would be
24 agreement from the regulatory bodies that this is
25 an appropriate action to take. Here again,

1 reiterating it is not a blank check by any stretch,
2 and I don't think the investment community expects
3 it to be a blank check, but they do take comfort in
4 the fact when there is a process such as we're
5 engaged in now, they look at that, and I think that
6 projects that have gone through a process like this
7 will be in a better position to obtain financing on
8 favorable terms than a project that has not been
9 through such a thorough process as this.

10 Q. And just one final question. I can't
11 remember if this was specifically one of your
12 recommendations either in the first or second
13 testimony or not, but does it make sense to have
14 some way -- in some manner formally in the
15 Commission order some sort of -- if the Commission
16 does approve prudence, some requirement that the
17 utilities keep informed and make available for
18 Commission review the process of the financing when
19 it becomes available so it can be reviewed right at
20 that time as opposed to, you know, maybe years down
21 the line when they come in for a rate case to
22 incorporate this in?

23 A. I have some conditions which generally
24 speak to an obligation on the utilities -- the
25 applicants to advise the Commission of any

1 significant developments. I think that information
2 concerning financing would fit into that, and if
3 there should be -- to make it clear, I would
4 suggest that there be specific language in the
5 order. It would be consistent with one of my
6 conditions that I testified to earlier.

7 COMMISSIONER CLARK: Okay. Thank you.

8 JUDGE WAHL: Any further questions from
9 the Commission? Commissioner Cramer.

10 **EXAMINATION**

11 **BY COMMISSIONER CRAMER:**

12 Q. I just have one more general one that I
13 asked Mr. Uggerud, probably should have asked Mr.
14 Schlissel this, as well. But having been through
15 all of this now and sat through two and a half days
16 of testimony on top of reading all the prefiled,
17 would there be anything to be gained by the
18 applicants by bringing the second most prudent or
19 third most prudent project to us as opposed to the
20 most prudent? What should we be looking out for
21 that's maybe not obvious?

22 A. That's a good question. There was some
23 discussion either yesterday or the first day of the
24 hearing in this regard, and it's a matter that I
25 agree with. I think as regulators, you all

1 certainly -- you're in a position that I don't
2 envy. It's kind of nice not to be on the
3 Commission anymore making these difficult
4 decisions.

5 But as a regulator, I would suggest that
6 you take some degree and comfort -- some degree of
7 comfort that the applicants have brought to you a
8 project which is not the easy course of
9 action. I would think a regulator should be
10 skeptical of a project which seems to be the easy
11 course of action, one that is -- would receive less
12 scrutiny from a number of intervenors, less
13 scrutiny -- would be less capital intensive so that
14 it would put less pressure on their financial
15 statements, one that perhaps would -- that they
16 would be perhaps more assured of cost recovery
17 because it is not so controversial and because it
18 is not subject to a greater degree of construction
19 risk, that being a longer construction time and
20 perhaps the materials and labor involved in that.

21 I think the applicants here are exposing
22 themselves to some degree, but I think, you know,
23 based upon my review, their motivations are because
24 they're doing this because they believe it is what
25 is in the best interest of their customers.

1 Certainly they're doing it with an idea that it
2 is -- in the long term it's going to be in the best
3 interest of their stockholders, as well.

4 But as a regulator, I was always
5 suspicious of projects which were -- took less time
6 to construct, more dependent upon fuels that could
7 fluctuate widely, and I'm talking about natural gas
8 projects, and particularly in the State of
9 Florida -- and I'm not so sure of the fuel
10 adjustment process in North Dakota, but in Florida
11 there is a fuel adjustment process, and while there
12 is a great deal of review of those costs, generally
13 the vast majority of all fuel costs get passed
14 through to customers. So with utility management
15 realizing that, the easy course or the natural
16 inclination would be to go forward with a project
17 that has a low capital cost, perhaps high fuel cost
18 because they're going to get recovery, anyway, and
19 they do not expose their stockholders to the level
20 of risk that these applicants are coming forward
21 and trying to get approval to proceed.

22 So while any project has to have a great
23 deal of review, the fact that this project is not
24 the easy course of action, I think as a regulator
25 you should -- obviously you should not just approve

1 it because it's not the easy course of action, but
2 I think the fact that they're willing to go forward
3 with this project should provide some degree of
4 comfort, because the motivation is to get savings
5 in the long term, and those savings are going to
6 be -- if projections go forward as planned, which
7 we know they're going to be different to some
8 degree, but as projected, the savings are going to
9 be in the long term, and the savings are going to
10 be achieved through lower fuel cost and the fact
11 that this plant is dispatchable and there could be
12 the opportunity for off-system sales, as I refer to
13 them, and that the life of this plant is going to
14 be an extremely long plant, and that once the
15 depreciated value reaches to a point to where --
16 and they're still operating efficiently and
17 effectively, there are going to be savings for the
18 customers, but it's going to be long-term savings.

19 COMMISSIONER CRAMER: Thank you. I have
20 nothing else.

21 JUDGE WAHL: Any further questions from
22 the Commission? Followup, Mr. Binek?

23 MR. BINEK: No.

24 JUDGE WAHL: Followup, Mr. Guerrero?

25 MR. GUERRERO: No. Thank you.

1 JUDGE WAHL: Followup, Ms. La Seur?

2 MS. LA SEUR: Yes.

3 **RE-CROSS-EXAMINATION**

4 **BY MS. LA SEUR:**

5 Q. Mr. Deason, doesn't every generation
6 project proposal of this size, especially when it's
7 coal-fired, in this day and age pass through
8 similar regulatory review?

9 A. Well, you know, I think that there is a
10 growing trend across the country for regulatory
11 bodies to engage in these type reviews, and I think
12 it is a good thing. I know that it's done in
13 Florida. Obviously, I know it's done in North
14 Dakota. But I think what we're seeing is a
15 necessity to do that, because the high-capital
16 projects, particularly with some of the unknowns
17 that we have out there today, that it is the
18 prudent course of action to go in and to advise
19 regulators and to have the regulators at the
20 planning process have input. And sometimes those
21 projects survive and sometimes they don't. But I
22 think it's important.

23 And I also think it's important to engage
24 in this process that we're engaged in because it
25 facilitates applicants or utilities coming forward

1 with the course of action which is not the course
2 of least resistance. If there was not a situation
3 where there was an opportunity to present the case
4 to the regulatory body and have the regulatory body
5 agree that it is the appropriate course of action,
6 I think that potentially cost-saving plants such as
7 Big Stone II probably would not make it through the
8 screening process because of the high risks that
9 are involved. I think the process that we're
10 involved in here is to a degree -- to a large
11 degree risk mitigation, which is going to be
12 beneficial to the customers in the long term.

13 Q. So does this regulatory review process --
14 this very process we're involved in create any
15 genuine financing advantage for this specific
16 project?

17 A. Well, it's not something that you can
18 quantify, but I think theoretically and I think in
19 reality that there will be. All you have to look
20 is to -- I think it's in my testimony, the
21 reference to the -- to the principles which have
22 been adopted by a number of investment firms
23 indicating that they believe that it is important
24 that there be a process such as this that we're
25 engaged in to be able to finance projects which are

1 potentially going to be subject to carbon
2 regulation cost.

3 Q. Okay. Since you referenced the
4 principles, are you able to summarize those, or
5 would it be -- would you need to look at them to be
6 reminded?

7 A. Well, I'm aware of some press accounts,
8 and I think in response to a data request that the
9 principles, themselves, or either a summary of
10 their principles were provided by the applicants in
11 response to that. But if you have something for me
12 to look at, that would be fine.

13 Q. I would like to show the witness
14 Applicants' Exhibit -- let's see, it was originally
15 numbered DAS-S5 and I believe it was entered into
16 the record as I 15.

17 MR. GUERRERO: Is it part of Mr.
18 Schlissel's testimony?

19 MS. LA SEUR: Yes.

20 Q. (MS. LA SEUR CONTINUING) And having
21 looked at this exhibit, which is The Carbon
22 Principles established by a set of major investment
23 banks, I believe, is your memory refreshed as to
24 the intent on the principles, themselves?

25 A. Yes. And I'm looking at the specific data

1 request which I submitted and I'm looking at the
2 response to it, and it appears to be consistent
3 with that.

4 Q. And are you able to summarize The Carbon
5 Principles?

6 A. Well, they were principles that were
7 developed, I think -- I'm looking here at my notes,
8 I think Citi, J.P. Morgan Chase and Morgan Stanley
9 and they did it in consultation with some leading
10 power companies to come up with principles to guide
11 the financing of projects, and they have
12 categorized several of their principles. There's a
13 category involving energy efficiency, renewable and
14 low carbon distributed energy technologies, and
15 then there's a section involving conventional and
16 advanced generation.

17 Q. And is it the recommendation of the
18 authors of The Carbon Principles that carbon costs
19 be included as part of regulatory review of new
20 generation facilities?

21 A. Yes, I think it's part of the principles
22 that there be a recognition that there is the
23 potential for carbon cost and that they be part of
24 the overall evaluation of new generation.

25 Q. Could the failure to consider carbon costs

1 in a full and open proceeding give a false
2 advantage to the second or third most prudent
3 course of action?

4 A. I'm sorry. Could you repeat that
5 question, please?

6 Q. The question is, could the failure to
7 consider environmental externalities such as CO2
8 prices in a full and open proceeding give a false
9 advantage to the second or third most prudent
10 course of action?

11 A. Well, I think the failure to consider the
12 potential of carbon regulation would work to the
13 disadvantage of any alternative, because it would
14 not be -- there would not be full information
15 available to the decisionmaker involved. If there
16 is inadequate evaluation of potential costs, carbon
17 or otherwise, there's less satisfaction on the
18 investor's point of view that the project that's
19 being selected is the most cost effective and is
20 the project that is most likely to -- the project
21 that is less likely to be subject to material cost
22 disallowances at the time that the project is
23 included in rate base.

24 MS. LA SEUR: Thank you. That's all I
25 have.

1 JUDGE WAHL: Any followup by the
2 Commission? Any further questions from the
3 Commission?

4 COMMISSIONER WEFALD: No.

5 COMMISSIONER CLARK: No.

6 JUDGE WAHL: Mr. Guerrero, followup? Or
7 I'm sorry. Mr. Binek, followup?

8 MR. BINEK: No.

9 JUDGE WAHL: Mr. Guerrero?

10 MR. GUERRERO: No. Thank you.

11 JUDGE WAHL: All right. Thank you very
12 much, Mr. Deason.

13 THE WITNESS: Thank you.

14 MR. GUERRERO: Your Honor -- Todd
15 Guerrero, for the record -- we are ready to call
16 Mr. Rogelstad. He needs five minutes or
17 thereabouts to get to another room where he will be
18 taking the call, so I will call him right now.

19 JUDGE WAHL: Okay. We'll be in recess for
20 -- until a quarter to, please.

21 COMMISSIONER WEFALD: Can I make an
22 announcement to the group? I will need to miss the
23 last witness that's called. I already had a
24 luncheon speech arranged for this noon, and so I'm
25 going to be leaving to do that. However, that does

1 not mean that I will not review the record to see
2 the information that is presented apart from the
3 testimony of Mr. Rogelstad which I have already
4 read. Thank you.

5 In case I am not here at the end of the
6 hearing, I just would like to thank all of the
7 participants -- all of the participants for the
8 excellent record which has been established by the
9 Commission in order to make a decision. Thank you.

10 (Recess taken at 11:41 a.m. to 11:52 a.m.)

11 JUDGE WAHL: We're back on the record.
12 Mr. Guerrero, you wish to call Mr. Rogelstad?

13 MR. GUERRERO: We do, Your Honor, and he's
14 awaiting your call.

15 JUDGE WAHL: All right. Mr. Rogelstad,
16 this is Al Wahl at the North Dakota Public Service
17 Commission and we are ready for your testimony.
18 Are you ready?

19 THE WITNESS: Yes, I am.

20 JUDGE WAHL: Mr. Rogelstad, I recall your
21 appearance and testimony for the previous hearings
22 had for these cases and I have personal knowledge
23 that you are advised and informed regarding
24 perjury. Accordingly, Mr. Rogelstad, you
25 understand, of course, that your testimony

1 continues for these cases under oath and subject to
2 the penalties of perjury?

3 THE WITNESS: Yes, I do.

4 JUDGE WAHL: Mr. Guerrero.

5 MR. GUERRERO: Thank you.

6 **TIMOTHY J. ROGELSTAD,**

7 having been previously duly sworn, was examined
8 and testified as follows:

9 **DIRECT EXAMINATION**

10 **BY MR. GUERRERO:**

11 Q. Could you state your name and spell it for
12 the record, please?

13 A. Sure. Timothy Rogelstad, last name
14 R-o-g-e-l-s-t-a-d.

15 Q. What is your position, Mr. Rogelstad?

16 A. I'm the manager of delivery planning at
17 Otter Tail Power.

18 Q. And what does that mean?

19 A. I have four primary areas of
20 responsibility. I manage the transmission planning
21 function of the company, the transmission contracts
22 that we have with other utilities in the region. I
23 also oversee the project management of the Big
24 Stone II transmission. I'm also responsible for
25 the development and monitoring of the capital

1 budget for Otter Tail Power Company.

2 Q. And how long have you been with Otter
3 Tail?

4 A. I've been with Otter Tail for about 19
5 years.

6 Q. And what is your educational background?

7 A. I have a bachelor of science degree from
8 North Dakota State University in electrical
9 engineering.

10 Q. Did you have an occasion to prepare
11 prefiled supplemental direct testimony in this
12 case?

13 A. Yes, I did.

14 Q. Do you have that with you, Mr. Rogelstad?

15 A. I do.

16 Q. And it's been marked as OTP/MDU Exhibit
17 325?

18 A. Yes.

19 Q. And if I asked you the same questions that
20 are posed in that document, would your answers be
21 the same?

22 A. Yes, they would.

23 Q. Are there any corrections that you have?

24 A. I have no corrections.

25 MR. GUERRERO: Your Honor, we would offer

1 OTP/MDU 325.

2 JUDGE WAHL: Mr. Breen?

3 MR. BREEN: No objection.

4 JUDGE WAHL: Mr. Binek?

5 MR. BINEK: No objection.

6 JUDGE WAHL: OTP/MDU 325 is received.

7 Q. (MR. GUERRERO CONTINUING) Mr. Rogelstad,
8 do you also have a summary of your testimony?

9 A. Yes. Yes, I do.

10 Q. And that's been marked as 325A?

11 A. Yes. Okay.

12 MR. GUERRERO: Mr. Rogelstad, we've marked
13 your summary here as OTP/MDU 325A. We would offer
14 that exhibit, as well, Judge.

15 JUDGE WAHL: Mr. Breen?

16 MR. BREEN: No objection.

17 JUDGE WAHL: Mr. Binek?

18 MR. BINEK: No objection.

19 JUDGE WAHL: OTP/MDU Exhibit 325A is
20 received.

21 Q. (MR. GUERRERO CONTINUING) Mr. Rogelstad,
22 could you please briefly give your summary?

23 A. Yes. I start on page 2 with the slide
24 entitled transmission project. There are two high-
25 voltage transmission lines that we proposed with

1 the Big Stone project, one a 230 kV line that runs
2 between Big Stone to near -- a substation near
3 Morris, Minnesota, a second line that would be
4 constructed at 345 kV from Big Stone to the Granite
5 Falls, Minnesota, area. The Big Stone-Granite
6 Falls line will likely be initially operated at 230
7 kV, but depending upon the timing of the CapX
8 projects, it's possible that it could be operated
9 at 345 kV upon initial energization.

10 The transmission project that was proposed
11 in this proceeding over a year ago has not changed.
12 The resulting reduction in plant size has resulted
13 in no change in the primary transmission facilities
14 for the Big Stone project. In addition, the
15 project continues to maintain its MISO queue
16 position with regard to generation interconnection
17 to the Midwest ISO.

18 Turning to page 3, cost estimates related
19 to the transmission project are now estimated to be
20 \$249 million. That would be for both
21 interconnection facilities and also the delivery
22 service facilities. This is an \$11 million
23 increase from our December 2006 estimate, and the
24 majority of the increase is related to the
25 inflation as a result of delaying the project.

1 Turning to slide 4, both transmission
2 facilities' in-service dates are early 2013, which
3 would be prior to the operation of the Big Stone
4 Unit II.

5 Q. Could you repeat that last statement, Mr.
6 Rogelstad? You muted out.

7 A. Oh, I'm sorry. The in-service dates for
8 the transmission facilities for the Big Stone
9 project are -- transmission facilities are intended
10 to be in service in early 2013, which would be
11 prior to the operation of the Big Stone generation
12 Unit II coming on line. And that concludes my
13 summary.

14 Q. Thank you, Mr. Rogelstad. Mr. Rogelstad,
15 did you have occasion yesterday to listen in to
16 part of the hearing via the Internet?

17 A. I did listen to parts of the hearing, yes,
18 I did.

19 Q. Did you hear questions in particular from
20 Commissioner Clark with respect to a question about
21 trying to determine or get some sense of
22 comparative analysis or apples-to-apples comparison
23 on transmission alternatives for the Big Stone
24 project versus sort of a wind/gas alternative or
25 gas/wind alternative?

1 A. Yes, I recall that question.

2 Q. Could you provide some commentary to that
3 effect from your experience as a transmission
4 expert?

5 A. Sure. The transmission that's proposed
6 for Big Stone -- I'll give you an example. We've
7 designed or planned a transmission system to
8 accommodate actually up to 600 megawatts of
9 generation at the Big Stone site. For the purposes
10 of my example here I'll assume a 580-megawatt
11 project. In that example we had to build the two
12 lines, Big Stone to Morris and Big Stone to Granite
13 Falls, as a result of adding 580 megawatts or 600
14 megawatts of generation to the system. If you look
15 at the -- from an energy standpoint what the amount
16 of energy that that baseload coal unit would
17 produce, it would be roughly about four and a half
18 million megawatt-hours per year. And in order to
19 get that same amount of energy, if you assume --
20 from a wind-generating facility, if you assume a 38
21 percent capacity factor, you'd have to install
22 approximately 1,350 megawatts of nameplate wind.
23 And so the transmission necessary to interconnect
24 1,350 megawatts of wind is substantially different
25 than the transmission necessary to connect 580

1 megawatts of baseload coal. And it simply comes
2 down to a simple factor of taking the -- or
3 dividing the capacity factor of a baseload unit,
4 divided by the capacity factor of the intermittent
5 unit. And so in this example that I gave it's
6 approximately 2.3 times the amount of -- there's
7 2.3 times the number of nameplate megawatts it
8 would require, and roughly that's probably about
9 the same amount of transmission that would be
10 required. Now, I caveat that with transmission
11 comes in kind of lumps, and so it's not a perfectly
12 linear relationship, but it should give you a rough
13 idea of kind of the comparison that would be there.

14 MR. GUERRERO: Thank you, Mr. Rogelstad.
15 We tender him for questions, Your Honor.

16 JUDGE WAHL: Mr. Breen?

17 MR. BREEN: No questions.

18 JUDGE WAHL: Mr. Binek?

19 MR. BINEK: I have no questions of this
20 witness.

21 JUDGE WAHL: Questions from the
22 Commission? Commissioner Clark.

23 **EXAMINATION**

24 **BY COMMISSIONER CLARK:**

25 Q. Just a couple. In the previous testimony

1 I recall that there was one segment of line that
2 could be operated at a lower, I think -- was it the
3 345 kV Big Stone to Granite Falls which could be
4 built to 230; is that right?

5 A. Yes. The interconnection study that's
6 been done through the Midwest ISO required 230 kV
7 facilities, both Big Stone to Morris and also Big
8 Stone to Granite Falls. And so in order to -- if
9 you look at the needs of only Big Stone generation,
10 230 kV facilities would be adequate for both Big
11 Stone to Morris and also Big Stone to Granite
12 Falls.

13 Q. So given that it's downsized to 5 or 580,
14 is the 230 now more adequate than -- I don't know
15 if -- that's not an engineering term -- more
16 adequate than the adequateness that it had before?

17 A. I guess I would characterize it as that it
18 was adequate at 600 megawatts and we also believe
19 it's adequate at 500. I think the difference, you
20 know, certainly is that it frees up more room for
21 other generators to use the additional capability
22 that's being created. And we have -- again,
23 continue to believe in the decision that, you know,
24 there's a strong need for increasing the
25 transmission capability out of that region and that

1 capability will be used up as soon as it's put in
2 service.

3 Q. As you probably know from listening in to
4 the Commission discussion from the previous
5 hearings, I had some concern with that, and I
6 continue to, and, in fact, this development
7 probably makes it even a little bit more so, and
8 it's -- just in the spirit of full disclosure, it's
9 simply that I do have some concerns with using a
10 prudency hearing for a specific project and then
11 granting preprudency to ancillary services to that
12 that aren't tied to any specific project within the
13 prudency hearing, itself. And so I do continue to
14 have some concerns with that.

15 JUDGE WAHL: Any further questions from
16 the Commission?

17 COMMISSIONER CRAMER: No.

18 JUDGE WAHL: Followup, Mr. Guerrero?

19 MR. GUERRERO: Just one or two, Your
20 Honor. Thank you.

21 **REDIRECT EXAMINATION**

22 **BY MR. GUERRERO:**

23 Q. Mr. Rogelstad, could you clarify for the
24 Commission's purposes how far down we would have to
25 go in terms of a thermal plant before your 230 plan

1 would change?

2 A. We projected that to be about 150
3 megawatts.

4 Q. So can you explain what that means?

5 A. Yes. So effectively if we reduce the
6 plant size to below 1,250 megawatts, then that
7 would -- we would not need to build two lines at
8 230 kV.

9 Q. So if you built -- so the next -- what
10 would you build it at; do you know?

11 A. Most likely we would build it at 115 kV.

12 Q. So the step change is 115 kV to 230 kV?

13 A. Yes.

14 Q. And a 500- or 580-megawatt plant down to a
15 150-megawatt plant, there's quite a bit of room
16 there?

17 A. That is correct.

18 MR. GUERRERO: No further questions, Your
19 Honor.

20 JUDGE WAHL: Mr. Breen?

21 MR. BREEN: No questions.

22 JUDGE WAHL: Mr. Binek?

23 MR. BINEK: No questions.

24 JUDGE WAHL: Followup, Commissioner Clark?

25 COMMISSIONER CLARK: No. Thank you.

1 JUDGE WAHL: Thank you very much, Mr.
2 Rogelstad.

3 THE WITNESS: Thank you.

4 MR. GUERRERO: Thank you. Your Honor,
5 that would be our last witness and --

6 MR. KUNTZ: Applicants rest.

7 MR. GUERRERO: -- I believe applicants
8 rest.

9 JUDGE WAHL: Mr. Breen, anything further
10 from intervenors?

11 MR. BREEN: Intervenors rest.

12 JUDGE WAHL: Mr. Binek, anything further
13 from the Commission's advocacy staff?

14 MR. BINEK: No.

15 JUDGE WAHL: All right. Very good.
16 Commissioners, closing comments.

17 COMMISSIONER CLARK: Just thank you for an
18 excellent hearing, appreciated all the input.

19 COMMISSIONER CRAMER: Thank you, all.
20 Safe travels back home, wherever that might. I
21 trust that Mr. Deason can verify to FPL that there
22 are adequate wind resources in North Dakota for
23 further investment.

24 MR. DEASON: I'll deliver the message.

25 COMMISSIONER CRAMER: Thank you.

1 CERTIFICATE OF COURT REPORTER

2
3 I, Denise M. Andahl, a Registered
4 Professional Reporter,

5 DO HEREBY CERTIFY that I recorded in
6 shorthand the foregoing proceedings had and made of
7 record at the time and place hereinbefore
8 indicated.

9 I DO HEREBY FURTHER CERTIFY that the
10 foregoing typewritten pages (Pages 813-941,
11 1119-1242 and 1417-1534) contain an accurate
12 transcript of my shorthand notes then and there
13 taken.

14 Bismarck, North Dakota, this 6th day of
15 May, 2008.

16
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18 Denise M. Andahl
19 Registered Professional Reporter
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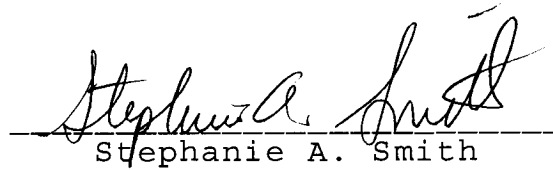
CERTIFICATE OF COURT REPORTER

I, Stephanie A. Smith, a Registered Professional Reporter,

DO HEREBY CERTIFY that I recorded in shorthand the foregoing proceedings had and made of record at the time and place hereinbefore indicated.

I DO HEREBY FURTHER CERTIFY that the foregoing typewritten pages (Pages 942-1118, 1243-1416) contain an accurate transcript of my shorthand notes then and there taken.

Bismarck, North Dakota, this 6th day of May, 2008.



Stephanie A. Smith
Registered Professional Reporter

<p style="text-align: center;">\$</p> <p>\$1,122 [1] - 1490:7 \$1,795 [1] - 1490:5 \$1.50 [2] - 1431:8, 1457:8 \$10 [1] - 1449:20 \$11 [1] - 1526:22 \$128 [1] - 1490:7 \$249 [1] - 1526:20 \$280,000 [1] - 1434:7 \$5,000 [1] - 1422:10 \$500 [1] - 1490:11 \$545 [1] - 1490:6 \$60 [1] - 1430:18 \$674 [1] - 1490:10 \$73.98 [2] - 1502:2, 1502:10 \$75.26 [1] - 1502:6 \$77.65 [2] - 1502:6, 1502:12 \$MMBTU [1] - 1419:5</p>	<p>1501:23 1417-1534 [1] - 1535:11 1422 [1] - 1418:4 1424 [11] - 1418:22, 1418:23, 1419:5, 1419:8, 1419:10, 1419:12, 1419:14, 1419:16, 1419:19, 1419:20, 1419:22 1425 [11] - 1418:22, 1418:23, 1419:5, 1419:8, 1419:10, 1419:12, 1419:14, 1419:16, 1419:19, 1419:20, 1419:22 1436 [1] - 1418:4 1455 [1] - 1418:5 1466 [1] - 1418:5 1475 [1] - 1418:6 1478 [1] - 1418:6 1480 [1] - 1418:7 1486 [2] - 1418:9, 1420:4 1487 [1] - 1420:4 1492 [1] - 1418:9 1497 [1] - 1418:10 15 [1] - 1518:16 150 [1] - 1532:2 150-megawatt [1] - 1532:15 1500 [1] - 1418:10 1506 [1] - 1418:11 1512 [1] - 1418:11 1516 [1] - 1418:12 1523 [1] - 1418:14 1524 [1] - 1418:19 1525 [3] - 1418:19, 1418:20 1529 [1] - 1418:14 1531 [1] - 1418:15 16 [2] - 1450:16, 1492:12 17 [2] - 1450:16, 1451:8 170 [5] - 1503:13, 1503:21, 1505:7, 1505:13, 1506:5 18 [1] - 1450:16 19 [3] - 1495:4, 1507:1, 1524:4 1970s [2] - 1447:3, 1455:17 1973 [1] - 1423:21 1975 [1] - 1423:21 1990 [1] - 1431:2 1990-2030 [1] - 1419:12 1990s [4] - 1432:10, 1456:24, 1457:7, 1471:12 1995 [1] - 1423:13 1998 [4] - 1428:8, 1428:15, 1430:1, 1430:2 1998-2006 [1] - 1419:8</p>	<p>2.3 [2] - 1529:6, 1529:7 20 [3] - 1423:14, 1437:16, 1447:15 200 [1] - 1486:8 2000 [2] - 1419:5, 1431:20 2001 [4] - 1419:16, 1428:15, 1442:7, 1478:2 2002 [1] - 1430:11 2005 [1] - 1419:18 2006 [1] - 1526:23 2008 [7] - 1417:18, 1421:2, 1421:5, 1501:16, 1534:16, 1535:15, 1536:7 2009 [1] - 1430:17 2010 [2] - 1428:11, 1430:4 2013 [3] - 1502:3, 1527:2, 1527:10 2015 [1] - 1428:11 2032 [1] - 1502:3 21 [2] - 1440:23, 1445:10 22 [3] - 1440:23, 1445:10, 1468:19 223 [1] - 1483:22 23 [2] - 1468:19, 1468:22 230 [9] - 1526:1, 1526:6, 1530:4, 1530:6, 1530:10, 1530:14, 1531:25, 1532:8, 1532:12 26 [1] - 1488:23 264 [4] - 1463:8, 1466:25, 1467:3, 1468:24 27 [1] - 1488:23 28 [1] - 1417:18 29 [1] - 1417:18</p>	<p>341A [3] - 1418:23, 1425:1, 1425:2 342 [2] - 1419:3, 1424:10 343 [1] - 1419:6 344 [1] - 1419:9 345 [4] - 1419:11, 1526:4, 1526:9, 1530:3 346 [2] - 1419:13, 1463:6 347 [5] - 1419:15, 1440:6, 1441:4, 1475:13 348 [1] - 1419:17 349 [1] - 1419:20 350 [8] - 1419:21, 1424:10, 1424:13, 1424:25, 1425:9, 1448:15, 1448:21, 1464:16 351 [4] - 1464:17, 1464:20, 1464:23, 1464:25 352 [1] - 1465:25 353 [1] - 1484:5 36 [1] - 1437:14 37.3 [1] - 1440:13 38 [2] - 1491:5, 1528:20</p>
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	2		5
		<p>3 [14] - 1427:23, 1429:12, 1429:14, 1430:3, 1433:5, 1448:15, 1449:2, 1453:4, 1466:17, 1491:4, 1491:7, 1526:18 30 [9] - 1417:18, 1421:2, 1428:6, 1429:20, 1448:18, 1449:6, 1450:8, 1479:4, 1534:16 30-something [2] - 1437:4, 1479:16 301 [1] - 1486:8 30th [1] - 1421:5 32 [4] - 1421:20, 1421:21, 1424:5, 1424:9 32301 [1] - 1486:9 325 [4] - 1418:19, 1524:17, 1525:1, 1525:6 325A [4] - 1418:20, 1525:10, 1525:13, 1525:19 341 [5] - 1418:21, 1424:6, 1424:7, 1424:25, 1425:8</p>	<p>5 [9] - 1432:4, 1443:11, 1443:17, 1451:8, 1459:13, 1500:21, 1505:15, 1505:19, 1530:13 50 [1] - 1457:8 50-50 [2] - 1508:14, 1508:20 500 [12] - 1434:2, 1451:10, 1451:11, 1451:22, 1451:24, 1462:25, 1500:21, 1500:25, 1502:10, 1503:25, 1530:19, 1532:14 500-megawatt [4] - 1454:7, 1454:14, 1490:11, 1502:4 52 [1] - 1491:4 580 [4] - 1503:24, 1528:13, 1528:25, 1530:13 580-megawatt [3] - 1502:4, 1528:10, 1532:14</p>

6	<p>acceptable [2] - 1480:24, 1484:4</p> <p>accepting [1] - 1443:22</p> <p>access [1] - 1446:9</p> <p>accessible [2] - 1469:9</p> <p>accidents [1] - 1474:22</p> <p>accommodate [1] - 1528:8</p> <p>accompany [1] - 1425:13</p> <p>according [2] - 1432:16, 1440:11</p> <p>Accordingly [2] - 1485:16, 1522:24</p> <p>account [3] - 1433:12, 1450:2, 1453:4</p> <p>accounted [1] - 1432:11</p> <p>accounts [3] - 1497:20, 1497:25, 1518:7</p> <p>accurate [3] - 1482:24, 1535:11, 1536:6</p> <p>achieved [1] - 1515:10</p> <p>acknowledge [1] - 1439:3</p> <p>acquire [1] - 1508:8</p> <p>action [12] - 1499:15, 1499:25, 1510:25, 1513:9, 1513:11, 1514:24, 1515:1, 1516:18, 1517:1, 1517:5, 1520:3, 1520:10</p> <p>actions [3] - 1487:24, 1493:6, 1493:8</p> <p>activities [5] - 1438:17, 1438:23, 1453:25, 1454:17, 1473:22</p> <p>acts [1] - 1455:19</p> <p>actual [3] - 1439:11, 1462:5, 1499:3</p> <p>add [2] - 1443:13, 1482:25</p> <p>adding [2] - 1443:12, 1528:13</p> <p>addition [1] - 1526:14</p> <p>additional [13] - 1434:19, 1469:8, 1479:9, 1488:12, 1488:13, 1488:18, 1489:8, 1491:14, 1492:21, 1506:4, 1506:6, 1510:6, 1530:21</p> <p>additions [3] - 1424:21, 1486:18, 1493:22</p> <p>address [2] - 1435:25, 1486:7</p> <p>addressed [5] - 1489:7, 1489:16, 1489:25, 1491:24, 1501:4</p> <p>addresses [2] - 1426:2, 1426:9</p> <p>addressing [1] - 1500:18</p> <p>adds [1] - 1443:23</p> <p>adequate [6] - 1530:10, 1530:14, 1530:16, 1530:18, 1530:19, 1533:22</p> <p>adequately [1] - 1491:24</p> <p>adequateness [1] - 1530:16</p>	<p>adjust [1] - 1460:22</p> <p>adjustment [2] - 1514:10, 1514:11</p> <p>administering [1] - 1422:6</p> <p>Administration [7] - 1419:4, 1428:3, 1428:10, 1429:17, 1450:3, 1467:9, 1467:10</p> <p>administration [2] - 1436:15, 1436:19</p> <p>ADMINISTRATIVE [1] - 1417:22</p> <p>admit [1] - 1505:16</p> <p>adopted [1] - 1517:22</p> <p>advance [2] - 1421:7, 1487:16</p> <p>Advance [2] - 1417:5, 1417:8</p> <p>advanced [1] - 1519:16</p> <p>advantage [3] - 1517:15, 1520:2, 1520:9</p> <p>advantages [1] - 1488:17</p> <p>adverse [1] - 1426:13</p> <p>advise [3] - 1422:5, 1511:25, 1516:18</p> <p>advised [2] - 1485:15, 1522:23</p> <p>advocacy [3] - 1455:4, 1485:11, 1533:13</p> <p>advocate [3] - 1439:1, 1479:16</p> <p>advocating [1] - 1438:24</p> <p>AEO [3] - 1428:5, 1430:1, 1430:17</p> <p>affect [8] - 1427:19, 1450:20, 1453:25, 1454:1, 1454:4, 1454:18, 1454:19, 1462:8</p> <p>affected [1] - 1453:23</p> <p>affiliate [1] - 1493:25</p> <p>age [1] - 1516:7</p> <p>agencies [1] - 1423:11</p> <p>ago [2] - 1479:5, 1526:11</p> <p>agree [7] - 1463:12, 1476:9, 1476:10, 1497:1, 1502:21, 1512:25, 1517:5</p> <p>agreement [1] - 1510:24</p> <p>ahead [2] - 1425:23, 1485:10</p> <p>aimed [2] - 1445:8</p> <p>Air [1] - 1438:20</p> <p>AL [1] - 1417:22</p> <p>Al [3] - 1421:22, 1428:25, 1522:16</p> <p>Algeria [1] - 1433:8</p> <p>allow [2] - 1467:15, 1477:17</p> <p>allowed [2] - 1473:20, 1491:16</p> <p>almost [3] - 1432:20, 1461:14, 1467:19</p> <p>alone [1] - 1441:17</p> <p>alternative [30] - 1426:13, 1426:15, 1434:4, 1434:11, 1452:12, 1452:13,</p>	<p>1452:23, 1472:25, 1481:4, 1482:2, 1482:3, 1491:22, 1495:9, 1495:22, 1496:2, 1498:13, 1501:25, 1502:21, 1502:23, 1503:14, 1503:25, 1504:15, 1505:8, 1507:19, 1508:6, 1508:13, 1509:23, 1520:13, 1527:24, 1527:25</p> <p>alternatives [13] - 1444:14, 1444:17, 1446:8, 1457:22, 1457:24, 1458:2, 1458:19, 1480:21, 1481:21, 1500:12, 1502:5, 1502:17, 1527:23</p> <p>aluminum [1] - 1471:24</p> <p>America [2] - 1463:8, 1463:16</p> <p>America's [1] - 1465:7</p> <p>American [4] - 1437:24, 1465:1, 1467:2, 1468:25</p> <p>amount [8] - 1462:22, 1463:17, 1504:7, 1510:23, 1528:15, 1528:19, 1529:6, 1529:9</p> <p>amounts [3] - 1460:13, 1464:1, 1468:13</p> <p>amused [2] - 1466:16, 1466:20</p> <p>analysis [4] - 1436:24, 1490:9, 1501:23, 1527:22</p> <p>analyst [1] - 1439:2</p> <p>analyzed [3] - 1487:18, 1487:19, 1487:21</p> <p>ancillary [1] - 1531:11</p> <p>Andahl [2] - 1535:3, 1535:17</p> <p>announcement [1] - 1521:22</p> <p>annual [7] - 1428:4, 1429:19, 1434:6, 1434:11, 1453:14, 1466:18, 1466:19</p> <p>Annual [1] - 1419:8</p> <p>annually [2] - 1439:5, 1468:17</p> <p>answer [11] - 1451:18, 1456:2, 1458:4, 1471:11, 1474:12, 1489:19, 1490:16, 1491:15, 1491:18, 1503:11, 1504:18</p> <p>answered [3] - 1457:23, 1460:7, 1492:11</p> <p>answers [5] - 1424:19, 1457:19, 1457:20, 1486:22, 1524:20</p> <p>anticipate [2] - 1499:23, 1503:17</p> <p>anticipated [1] - 1502:9</p> <p>anyway [1] - 1514:18</p> <p>apart [1] - 1522:2</p> <p>apologize [4] - 1429:9, 1437:12, 1439:23, 1457:1</p>
7	<p>7 [9] - 1433:25, 1446:12, 1449:20, 1464:8, 1464:10, 1496:17, 1505:22, 1505:23, 1507:16</p> <p>7.5 [1] - 1508:3</p> <p>71.9 [1] - 1441:7</p> <p>72 [1] - 1444:1</p> <p>75 [1] - 1433:12</p> <p>78 [1] - 1444:2</p>	<p>7 [9] - 1433:25, 1446:12, 1449:20, 1464:8, 1464:10, 1496:17, 1505:22, 1505:23, 1507:16</p> <p>7.5 [1] - 1508:3</p> <p>71.9 [1] - 1441:7</p> <p>72 [1] - 1444:1</p> <p>75 [1] - 1433:12</p> <p>78 [1] - 1444:2</p>	<p>7 [9] - 1433:25, 1446:12, 1449:20, 1464:8, 1464:10, 1496:17, 1505:22, 1505:23, 1507:16</p> <p>7.5 [1] - 1508:3</p> <p>71.9 [1] - 1441:7</p> <p>72 [1] - 1444:1</p> <p>75 [1] - 1433:12</p> <p>78 [1] - 1444:2</p>
8	<p>8 [1] - 1447:12</p> <p>813-941 [1] - 1535:10</p>	<p>8 [1] - 1447:12</p> <p>813-941 [1] - 1535:10</p>	<p>8 [1] - 1447:12</p> <p>813-941 [1] - 1535:10</p>
9	<p>9 [3] - 1443:16, 1443:17, 1448:11</p> <p>90 [1] - 1432:11</p> <p>94 [1] - 1446:5</p> <p>942-1118 [1] - 1536:5</p> <p>9:00 [1] - 1421:5</p> <p>9:02 [1] - 1421:2</p>	<p>9 [3] - 1443:16, 1443:17, 1448:11</p> <p>90 [1] - 1432:11</p> <p>94 [1] - 1446:5</p> <p>942-1118 [1] - 1536:5</p> <p>9:00 [1] - 1421:5</p> <p>9:02 [1] - 1421:2</p>	<p>9 [3] - 1443:16, 1443:17, 1448:11</p> <p>90 [1] - 1432:11</p> <p>94 [1] - 1446:5</p> <p>942-1118 [1] - 1536:5</p> <p>9:00 [1] - 1421:5</p> <p>9:02 [1] - 1421:2</p>
A	<p>a.m [6] - 1421:2, 1421:5, 1485:4, 1522:10</p> <p>able [8] - 1452:21, 1457:2, 1472:19, 1484:15, 1517:25, 1518:4, 1519:4, 1534:7</p> <p>absolutely [1] - 1494:7</p> <p>Abu [1] - 1433:8</p> <p>abundant [2] - 1430:8, 1461:15</p> <p>ACCCE [2] - 1437:23, 1447:9</p>	<p>a.m [6] - 1421:2, 1421:5, 1485:4, 1522:10</p> <p>able [8] - 1452:21, 1457:2, 1472:19, 1484:15, 1517:25, 1518:4, 1519:4, 1534:7</p> <p>absolutely [1] - 1494:7</p> <p>Abu [1] - 1433:8</p> <p>abundant [2] - 1430:8, 1461:15</p> <p>ACCCE [2] - 1437:23, 1447:9</p>	<p>a.m [6] - 1421:2, 1421:5, 1485:4, 1522:10</p> <p>able [8] - 1452:21, 1457:2, 1472:19, 1484:15, 1517:25, 1518:4, 1519:4, 1534:7</p> <p>absolutely [1] - 1494:7</p> <p>Abu [1] - 1433:8</p> <p>abundant [2] - 1430:8, 1461:15</p> <p>ACCCE [2] - 1437:23, 1447:9</p>

<p>apparent [1] - 1490:3 appearance [1] - 1522:21 apples [4] - 1483:1, 1527:22 apples-to-apples [2] - 1483:1, 1527:22 applicable [2] - 1444:20, 1446:3 Applicants [1] - 1533:6 applicants [17] - 1421:15, 1487:21, 1488:9, 1489:2, 1489:7, 1508:7, 1508:17, 1509:14, 1510:18, 1511:25, 1512:18, 1513:7, 1513:21, 1514:20, 1516:25, 1518:10, 1533:7 Applicants' [1] - 1518:14 applicants' [5] - 1443:22, 1487:15, 1487:18, 1488:2, 1501:12 Application [2] - 1417:6, 1417:9 application [1] - 1470:20 applications [1] - 1421:7 applied [1] - 1462:18 apply [2] - 1426:7, 1470:23 appreciate [2] - 1433:18, 1500:16 appreciated [1] - 1533:18 appropriate [4] - 1496:7, 1499:24, 1510:25, 1517:5 approval [1] - 1514:21 approve [4] - 1493:5, 1499:6, 1511:16, 1514:25 approved [3] - 1498:15, 1499:13, 1510:21 approving [2] - 1499:11, 1499:12 April [4] - 1417:18, 1421:2, 1421:5, 1534:15 Arab [1] - 1447:3 Arabia [3] - 1433:8, 1453:21, 1461:17 area [7] - 1451:1, 1479:3, 1479:17, 1489:12, 1490:1, 1490:22, 1526:5 areas [9] - 1468:8, 1468:11, 1468:12, 1488:3, 1488:17, 1489:8, 1489:10, 1523:19 argument [1] - 1445:16 argumentative [1] - 1454:10 arranged [1] - 1521:24 arrangements [1] - 1446:10 article [2] - 1424:14, 1448:22 articles [1] - 1473:18 aspects [1] - 1427:1 assertion [2] - 1439:8, 1478:22 asset [1] - 1469:13 assistant [1] - 1421:16 associated [4] - 1438:17,</p>	<p>1446:13, 1488:20, 1489:23 associations [1] - 1423:12 assume [7] - 1453:7, 1479:23, 1483:10, 1505:5, 1528:10, 1528:19, 1528:20 assumed [7] - 1490:5, 1490:10, 1491:1, 1491:8, 1495:11, 1496:9, 1507:19 assumes [1] - 1507:15 assuming [2] - 1495:25, 1508:14 assumption [2] - 1491:13, 1508:15 assumptions [11] - 1487:20, 1488:3, 1488:4, 1488:5, 1488:6, 1488:7, 1488:8, 1490:4, 1490:23, 1495:6, 1496:10 assurance [1] - 1495:7 assurances [1] - 1509:15 assured [2] - 1495:21, 1513:16 Atlantic [2] - 1459:24, 1473:15 attendant [1] - 1451:12 attention [1] - 1440:5 attorney [1] - 1436:11 attractive [1] - 1456:1 Aubrey [1] - 1449:19 authors [1] - 1519:18 available [13] - 1434:17, 1442:10, 1443:8, 1449:9, 1457:25, 1472:5, 1477:14, 1492:3, 1493:14, 1503:1, 1511:17, 1511:19, 1520:15 average [29] - 1429:24, 1431:3, 1431:22, 1434:22, 1435:1, 1435:8, 1440:2, 1440:11, 1440:14, 1440:18, 1440:25, 1441:10, 1441:19, 1441:24, 1442:6, 1442:9, 1475:13, 1476:6, 1477:12, 1482:13, 1483:4, 1483:6, 1483:11, 1483:14, 1483:17, 1483:24, 1483:25, 1484:1 Average [1] - 1419:16 averages [1] - 1483:16 avoid [2] - 1448:19, 1449:21 awaiting [1] - 1522:14 aware [7] - 1422:3, 1493:1, 1493:6, 1493:24, 1494:1, 1497:22, 1518:7</p>	<p>background [2] - 1423:18, 1524:6 backup [1] - 1426:18 balance [1] - 1466:15 ballpark [2] - 1507:11, 1507:13 band [1] - 1430:6 banks [2] - 1507:8, 1518:23 barely [2] - 1432:2, 1501:4 barrel [1] - 1430:19 base [8] - 1439:21, 1440:17, 1450:24, 1469:13, 1496:5, 1499:5, 1499:25, 1520:23 Based [1] - 1479:8 based [4] - 1427:20, 1451:4, 1479:25, 1513:23 baseload [7] - 1446:21, 1488:12, 1495:1, 1505:9, 1528:16, 1529:1, 1529:3 basis [6] - 1431:2, 1432:24, 1446:16, 1453:3, 1461:19, 1484:10 bearing [1] - 1487:25 became [2] - 1455:24, 1455:25 become [3] - 1430:12, 1432:22, 1469:9 becomes [4] - 1445:24, 1460:16, 1474:4, 1511:19 becoming [2] - 1450:14, 1467:24 BEFORE [1] - 1417:22 began [3] - 1428:8, 1447:1, 1455:17 begin [4] - 1429:11, 1433:18, 1436:13, 1474:6 beginning [4] - 1430:2, 1430:11, 1432:5, 1444:18 Beginning [1] - 1429:14 begins [2] - 1421:21, 1473:22 behave [1] - 1429:8 belittle [1] - 1447:16 below [1] - 1532:6 beneficial [1] - 1517:12 benefit [1] - 1496:20 best [5] - 1433:10, 1450:4, 1479:13, 1513:25, 1514:2 better [8] - 1442:11, 1442:17, 1442:21, 1442:23, 1443:5, 1457:17, 1504:16, 1511:7 Better [1] - 1442:20 between [12] - 1430:14, 1433:19, 1442:2, 1449:20, 1457:8, 1457:11, 1460:3, 1462:24, 1500:13, 1506:5, 1508:14, 1526:2 beyond [3] - 1457:6, 1469:2, 1474:11 bids [1] - 1489:22</p>	<p>big [1] - 1421:21 Big [79] - 1419:19, 1421:10, 1421:24, 1426:7, 1426:10, 1426:16, 1434:2, 1434:19, 1434:25, 1435:7, 1435:14, 1439:3, 1443:12, 1443:13, 1443:18, 1443:22, 1443:25, 1444:20, 1450:20, 1451:10, 1451:25, 1452:2, 1452:7, 1452:12, 1457:20, 1470:14, 1470:19, 1470:24, 1481:17, 1487:17, 1487:25, 1488:10, 1488:15, 1489:4, 1489:12, 1489:15, 1491:21, 1495:8, 1495:21, 1495:23, 1496:3, 1496:11, 1496:21, 1498:8, 1499:7, 1499:14, 1499:18, 1500:13, 1502:1, 1502:4, 1502:11, 1504:17, 1505:7, 1505:11, 1507:18, 1509:23, 1517:7, 1523:23, 1526:1, 1526:2, 1526:4, 1526:5, 1526:14, 1527:3, 1527:8, 1527:11, 1527:23, 1528:6, 1528:9, 1528:12, 1530:3, 1530:7, 1530:9, 1530:10, 1530:11 bigger [1] - 1450:6 billion [1] - 1462:25 bills [1] - 1434:16 Binek [21] - 1418:5, 1418:9, 1425:6, 1454:22, 1455:3, 1464:3, 1465:5, 1466:1, 1466:25, 1482:7, 1485:5, 1485:21, 1489:19, 1505:18, 1515:22, 1521:7, 1525:4, 1525:17, 1529:18, 1532:22, 1533:12 BINEK [24] - 1425:7, 1454:23, 1455:2, 1455:8, 1464:5, 1465:3, 1465:6, 1465:18, 1465:21, 1466:2, 1482:8, 1485:6, 1485:11, 1486:2, 1486:24, 1487:13, 1492:2, 1515:23, 1521:8, 1525:5, 1525:18, 1529:19, 1532:23, 1533:14 Bismarck [4] - 1417:18, 1483:7, 1535:14, 1536:7 bit [8] - 1433:5, 1457:2, 1469:5, 1474:4, 1487:6, 1494:16, 1531:7, 1532:15 black [2] - 1431:4, 1432:1 blank [4] - 1498:25, 1511:1, 1511:3 bodies [3] - 1510:18, 1510:24, 1516:11</p>
	B		
	<p>bachelor [1] - 1524:7 bachelor's [1] - 1423:19</p>		

<p>body [2] - 1517:4 bogeyman [1] - 1454:7 boil [2] - 1455:22, 1458:3 book [3] - 1421:21, 1501:17, 1501:18 bottom [2] - 1431:14, 1478:4 bottom-up [1] - 1478:4 bottommost [1] - 1430:1 Breen [5] - 1525:2, 1525:15, 1529:16, 1532:20, 1533:9 BREEN [5] - 1525:3, 1525:16, 1529:17, 1532:21, 1533:11 briefcase [1] - 1501:10 briefing [1] - 1534:2 briefly [1] - 1525:22 bring [1] - 1493:12 bringing [1] - 1512:18 brings [1] - 1458:18 broad [2] - 1469:12, 1471:21 broadly [2] - 1473:4, 1479:3 Bronough [1] - 1486:8 brought [2] - 1456:7, 1513:7 Btu [7] - 1430:4, 1431:8, 1431:23, 1434:6, 1434:9, 1457:9, 1457:11 BTUs [2] - 1449:20, 1465:20 budget [2] - 1435:23, 1524:1 build [7] - 1452:2, 1458:9, 1477:6, 1528:11, 1532:7, 1532:10, 1532:11 building [3] - 1434:2, 1474:1, 1481:2 built [8] - 1434:3, 1439:16, 1457:21, 1481:3, 1496:4, 1503:2, 1530:4, 1532:9 burden [1] - 1508:8 burn [3] - 1455:19, 1470:21, 1470:22 burned [1] - 1470:18 burning [2] - 1470:13, 1470:24 busbar [2] - 1490:9, 1502:2 Business [1] - 1423:22 business [5] - 1433:10, 1436:15, 1436:18, 1437:2, 1455:15 BY [17] - 1422:18, 1436:7, 1455:2, 1466:9, 1475:8, 1478:14, 1480:5, 1486:2, 1492:7, 1497:12, 1500:8, 1506:20, 1512:11, 1516:4, 1523:10, 1529:24, 1531:22</p>	<p>1452:3, 1463:14 calculations [3] - 1452:18, 1452:20, 1497:5 Canada [6] - 1432:13, 1432:14, 1459:6, 1459:11, 1459:13, 1467:19 canceled [2] - 1492:21, 1493:2 cannot [1] - 1480:20 cap [2] - 1497:23, 1498:7 capability [3] - 1530:21, 1530:25, 1531:1 capacity [10] - 1423:1, 1452:5, 1452:7, 1455:20, 1474:4, 1491:3, 1491:5, 1528:21, 1529:3, 1529:4 capital [14] - 1488:5, 1488:20, 1489:12, 1489:15, 1490:2, 1490:8, 1495:7, 1495:24, 1499:8, 1508:25, 1513:13, 1514:17, 1516:15, 1523:25 capital-intensive [1] - 1495:24 Capitol [1] - 1417:17 capture [5] - 1437:11, 1438:25, 1480:11, 1480:14, 1481:1 CapX [1] - 1526:7 Carbon [3] - 1518:21, 1519:4, 1519:18 carbon [17] - 1437:11, 1469:24, 1480:14, 1489:3, 1492:15, 1499:8, 1509:2, 1509:9, 1509:18, 1518:1, 1519:14, 1519:18, 1519:23, 1519:25, 1520:12, 1520:16 carbon-constrained [1] - 1469:24 cards [1] - 1432:24 carefully [1] - 1479:6 Caribbean [1] - 1460:12 Carrie [1] - 1436:10 carry [1] - 1481:2 Case [3] - 1417:5, 1417:8, 1421:11 case [22] - 1426:15, 1441:15, 1443:24, 1444:15, 1447:25, 1451:15, 1452:3, 1454:17, 1462:4, 1466:13, 1469:4, 1469:6, 1469:20, 1472:20, 1481:15, 1486:15, 1487:16, 1502:8, 1511:21, 1517:3, 1522:5, 1524:12 cases [5] - 1421:24, 1462:1, 1472:2, 1522:22, 1523:1 categorize [1] - 1468:2 categorized [1] - 1519:12</p>	<p>category [1] - 1519:13 caveat [1] - 1529:10 Center [2] - 1437:18, 1438:20 centered [1] - 1500:12 cents [2] - 1457:8, 1503:6 Century [1] - 1423:6 CERA [2] - 1449:5, 1450:7 certain [6] - 1446:2, 1458:4, 1467:14, 1488:16, 1510:23 Certainly [2] - 1506:2, 1514:1 certainly [7] - 1453:24, 1463:24, 1470:11, 1481:13, 1492:17, 1513:1, 1530:20 certainty [1] - 1467:13 CERTIFICATE [2] - 1535:1, 1536:1 CERTIFY [4] - 1535:5, 1535:9, 1536:3, 1536:5 challenge [3] - 1480:8, 1509:13, 1510:6 challenges [1] - 1510:10 chance [1] - 1474:3 change [13] - 1432:6, 1434:5, 1434:6, 1438:14, 1456:12, 1460:22, 1461:22, 1467:16, 1491:6, 1491:20, 1526:13, 1532:1, 1532:12 Change [1] - 1437:15 changed [4] - 1437:20, 1442:9, 1491:4, 1526:11 changes [7] - 1430:10, 1431:21, 1431:25, 1444:16, 1460:22, 1461:21, 1489:24 Changes [1] - 1419:6 changing [1] - 1473:15 characterization [1] - 1474:25 characterize [1] - 1530:17 chart [12] - 1428:1, 1431:3, 1440:11, 1440:13, 1466:16, 1466:17, 1475:14, 1475:21, 1476:14, 1483:10, 1483:16 charted [1] - 1430:25 charts [2] - 1430:24, 1476:20 Chase [1] - 1519:8 cheap [4] - 1430:8, 1472:9, 1472:10, 1479:18 check [5] - 1464:22, 1498:25, 1499:1, 1511:1, 1511:3 Chesapeake [1] - 1449:18 Chief [1] - 1449:18 chilled [1] - 1449:9 China [1] - 1433:16 choice [1] - 1496:22 choose [1] - 1505:10</p>	<p>choosing [1] - 1503:15 chose [1] - 1509:23 Citi [1] - 1519:8 cities [1] - 1476:24 City [1] - 1438:15 claimed [1] - 1444:24 clarification [4] - 1488:14, 1488:18, 1489:9, 1506:1 clarifications [1] - 1492:1 clarify [3] - 1460:9, 1495:16, 1531:23 CLARK [20] - 1455:6, 1475:6, 1475:8, 1478:8, 1482:16, 1482:24, 1483:8, 1483:18, 1484:3, 1484:9, 1484:17, 1487:7, 1500:22, 1506:20, 1512:7, 1521:5, 1529:24, 1532:25, 1533:17, 1534:10 Clark [12] - 1418:6, 1418:11, 1418:14, 1475:5, 1475:11, 1482:11, 1485:7, 1486:7, 1506:18, 1527:20, 1529:22, 1532:24 Class [1] - 1422:9 Clean [3] - 1437:24, 1437:25, 1438:20 clear [3] - 1456:9, 1459:7, 1512:3 clearly [1] - 1429:3 Clearly [2] - 1452:6, 1471:11 client [1] - 1438:6 Climate [1] - 1437:15 climate [2] - 1438:14, 1479:4 clipping [1] - 1497:21 close [2] - 1432:1, 1474:9 closed [2] - 1534:2, 1534:13 closer [2] - 1431:8, 1490:18 closing [1] - 1533:16 clustered [2] - 1428:16, 1430:6 Co [2] - 1417:7, 1421:9 CO2 [3] - 1469:25, 1480:11, 1520:7 coal [77] - 1426:21, 1426:22, 1426:23, 1427:9, 1427:16, 1427:20, 1431:1, 1431:5, 1431:25, 1434:2, 1435:14, 1435:20, 1438:2, 1438:4, 1438:24, 1442:13, 1442:18, 1442:25, 1444:1, 1444:5, 1445:11, 1445:15, 1445:17, 1445:24, 1446:6, 1446:11, 1446:13, 1446:14, 1446:16, 1451:25, 1456:2, 1456:8, 1456:23, 1457:6, 1457:11, 1458:9, 1458:15, 1458:19, 1461:5, 1461:9, 1461:13, 1461:16, 1461:17, 1461:24, 1463:15,</p>
C			
<p>calculated [2] - 1507:24, 1507:25 calculation [3] - 1434:23,</p>			

<p>1463:18, 1463:23, 1465:1, 1465:7, 1465:11, 1465:15, 1465:20, 1465:21, 1469:14, 1469:17, 1469:21, 1470:5, 1470:13, 1470:22, 1470:24, 1479:14, 1480:11, 1480:23, 1481:17, 1481:19, 1481:22, 1488:16, 1492:20, 1493:1, 1497:18, 1509:3, 1509:6, 1510:6, 1516:7, 1528:16, 1529:1</p> <p>Coal [5] - 1419:6, 1437:24, 1437:25, 1465:1, 1465:23</p> <p>coal-fired [5] - 1426:23, 1445:11, 1451:25, 1461:5, 1516:7</p> <p>Coalition [1] - 1437:24</p> <p>coincidentally [1] - 1493:16</p> <p>collectively [1] - 1433:11</p> <p>column [2] - 1440:9, 1475:22</p> <p>combination [1] - 1452:24</p> <p>combined [6] - 1434:3, 1451:22, 1452:4, 1455:21, 1490:2, 1490:6</p> <p>comfort [7] - 1507:17, 1510:16, 1510:20, 1511:3, 1513:6, 1513:7, 1515:4</p> <p>comfortable [1] - 1479:11</p> <p>coming [7] - 1459:14, 1459:24, 1460:5, 1460:8, 1514:20, 1516:25, 1527:12</p> <p>commencement [1] - 1489:5</p> <p>commencing [1] - 1421:2</p> <p>comment [1] - 1473:12</p> <p>commentary [1] - 1528:2</p> <p>commenting [1] - 1446:12</p> <p>comments [4] - 1443:6, 1453:12, 1453:16, 1533:16</p> <p>commercial [1] - 1455:10</p> <p>Commission [45] - 1421:11, 1421:23, 1425:25, 1435:25, 1455:4, 1466:4, 1466:11, 1475:12, 1478:11, 1482:10, 1483:3, 1484:21, 1485:11, 1489:24, 1493:5, 1494:3, 1496:5, 1496:7, 1497:16, 1497:22, 1498:3, 1498:7, 1498:12, 1498:13, 1499:10, 1499:24, 1500:4, 1502:25, 1506:15, 1508:11, 1511:15, 1511:18, 1511:25, 1512:9, 1513:3, 1515:22, 1521:2, 1521:3, 1522:9, 1522:17, 1529:22, 1531:4, 1531:16, 1534:6</p> <p>COMMISSION [1] - 1417:3</p>	<p>Commission's [2] - 1531:24, 1533:13</p> <p>Commissioner [17] - 1418:5, 1418:6, 1418:10, 1418:11, 1418:11, 1418:14, 1466:7, 1475:5, 1482:11, 1485:7, 1500:6, 1506:15, 1506:18, 1512:9, 1527:20, 1529:22, 1532:24</p> <p>COMMISSIONER [38] - 1455:6, 1464:14, 1465:19, 1465:23, 1466:5, 1466:9, 1474:24, 1475:6, 1475:8, 1478:8, 1482:16, 1482:24, 1483:8, 1483:18, 1484:3, 1484:9, 1484:17, 1485:9, 1487:7, 1500:5, 1500:8, 1500:22, 1500:24, 1506:16, 1506:20, 1512:7, 1512:11, 1515:19, 1521:4, 1521:5, 1521:21, 1529:24, 1531:17, 1532:25, 1533:17, 1533:19, 1533:25, 1534:10</p> <p>Commissioners [4] - 1425:15, 1425:19, 1466:4, 1533:16</p> <p>commodities [1] - 1476:6</p> <p>commodity [3] - 1427:12, 1427:13, 1470:8</p> <p>community [2] - 1510:15, 1511:2</p> <p>companies [5] - 1423:11, 1476:8, 1476:25, 1477:22, 1519:10</p> <p>company [8] - 1458:5, 1458:18, 1482:21, 1493:25, 1494:21, 1498:10, 1504:4, 1523:21</p> <p>Company [2] - 1493:4, 1524:1</p> <p>comparative [1] - 1527:22</p> <p>compare [1] - 1502:7</p> <p>compared [1] - 1452:23</p> <p>comparing [3] - 1483:9, 1484:18, 1500:12</p> <p>Comparison [1] - 1419:12</p> <p>comparison [4] - 1483:17, 1502:17, 1527:22, 1529:13</p> <p>competent [1] - 1474:17</p> <p>competition [1] - 1433:19</p> <p>competitive [1] - 1461:19</p> <p>compilation [1] - 1427:24</p> <p>compilations [1] - 1467:10</p> <p>compiled [1] - 1429:15</p> <p>Compiled [1] - 1419:7</p> <p>compiles [1] - 1467:8</p> <p>compliance [1] - 1488:22</p> <p>components [1] - 1489:19</p> <p>comprehensive [1] - 1478:3</p>	<p>comprised [1] - 1432:13</p> <p>concept [1] - 1426:2</p> <p>concern [4] - 1489:13, 1489:25, 1491:23, 1531:5</p> <p>concerning [4] - 1460:4, 1490:24, 1491:12, 1512:2</p> <p>concerns [5] - 1426:7, 1433:22, 1509:2, 1531:9, 1531:14</p> <p>conclude [5] - 1444:19, 1488:15, 1488:25, 1490:18, 1507:4</p> <p>Concluded [1] - 1534:15</p> <p>concluded [1] - 1504:12</p> <p>concludes [5] - 1488:9, 1489:6, 1491:25, 1496:19, 1527:12</p> <p>conclusion [2] - 1498:21, 1502:21</p> <p>conditions [4] - 1488:13, 1489:1, 1511:23, 1512:6</p> <p>confirmation [2] - 1489:4, 1507:25</p> <p>confirmed [1] - 1427:7</p> <p>connect [1] - 1528:25</p> <p>connection [1] - 1458:23</p> <p>consent [1] - 1534:4</p> <p>consequences [3] - 1451:12, 1481:15, 1507:23</p> <p>conservation [10] - 1446:19, 1446:20, 1447:4, 1447:10, 1452:11, 1452:24, 1478:23, 1479:2, 1479:18, 1493:11</p> <p>conservative [4] - 1490:20, 1495:6, 1495:15, 1496:13</p> <p>consider [14] - 1439:2, 1443:6, 1444:2, 1446:13, 1453:12, 1453:16, 1479:14, 1498:6, 1502:12, 1502:13, 1519:25, 1520:7, 1520:11, 1534:6</p> <p>consideration [1] - 1470:1</p> <p>considerations [2] - 1445:22, 1472:15</p> <p>considered [1] - 1452:14</p> <p>consistent [3] - 1490:15, 1512:5, 1519:2</p> <p>constitutes [1] - 1446:6</p> <p>constrained [3] - 1435:16, 1469:24, 1470:8</p> <p>construct [5] - 1426:10, 1426:16, 1470:25, 1498:17, 1514:6</p> <p>constructed [2] - 1470:14, 1526:4</p> <p>constructing [1] - 1480:10</p> <p>construction [9] - 1426:6, 1488:4, 1489:6, 1489:22, 1499:4, 1499:15, 1510:19,</p>	<p>1513:18, 1513:19</p> <p>consultant [3] - 1450:7, 1486:11, 1486:12</p> <p>consultation [1] - 1519:9</p> <p>consulting [5] - 1423:10, 1423:15, 1437:3, 1437:4, 1455:17</p> <p>consumed [3] - 1468:16, 1468:23, 1470:3</p> <p>consumers [7] - 1441:9, 1441:19, 1441:25, 1442:11, 1442:17, 1443:4, 1444:12</p> <p>consuming [1] - 1433:19</p> <p>Consumption [1] - 1419:16</p> <p>consumption [14] - 1435:8, 1435:18, 1440:2, 1440:19, 1441:1, 1441:11, 1441:12, 1474:5, 1475:14, 1479:20, 1482:13, 1483:5, 1483:14, 1483:16</p> <p>contain [2] - 1535:11, 1536:6</p> <p>contemplate [1] - 1506:4</p> <p>context [2] - 1465:12, 1502:16</p> <p>continent [3] - 1463:25, 1467:2, 1468:25</p> <p>continental [3] - 1468:5, 1469:3, 1494:11</p> <p>continuation [1] - 1491:13</p> <p>continue [9] - 1433:21, 1459:16, 1459:17, 1470:6, 1489:2, 1510:11, 1530:23, 1531:6, 1531:13</p> <p>Continued [2] - 1419:1, 1420:1</p> <p>continued [2] - 1421:1, 1432:16</p> <p>continues [4] - 1470:3, 1485:18, 1523:1, 1526:15</p> <p>CONTINUING [13] - 1425:10, 1439:20, 1443:21, 1448:16, 1449:1, 1452:10, 1455:8, 1465:6, 1487:13, 1500:24, 1518:20, 1525:7, 1525:21</p> <p>continuing [2] - 1421:6, 1450:5</p> <p>contracts [2] - 1473:24, 1523:21</p> <p>contradicted [1] - 1449:16</p> <p>contradiction [1] - 1449:17</p> <p>contrast [1] - 1441:7</p> <p>control [1] - 1462:19</p> <p>controversial [1] - 1513:17</p> <p>conventional [1] - 1519:15</p> <p>conversion [1] - 1484:16</p> <p>convert [1] - 1484:13</p> <p>converting [1] - 1469:16</p> <p>cooking [1] - 1455:13</p>
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<p>cooperatives [1] - 1477:4 coordinate [1] - 1467:11 copy [3] - 1424:15, 1425:16, 1501:9 Corporation [3] - 1417:5, 1421:8, 1497:16 correct [24] - 1436:15, 1436:16, 1436:17, 1438:11, 1438:18, 1440:3, 1441:13, 1441:20, 1445:2, 1476:22, 1481:12, 1481:22, 1482:1, 1494:24, 1495:13, 1496:16, 1499:14, 1505:3, 1505:5, 1508:1, 1510:1, 1510:5, 1510:10, 1532:17 Correct [4] - 1424:8, 1438:12, 1440:4, 1449:11 corrected [1] - 1505:4 corrections [4] - 1424:21, 1486:18, 1524:23, 1524:24 correctly [2] - 1492:22, 1496:24 correlation [1] - 1442:2 Cost [1] - 1498:19 cost [70] - 1426:6, 1434:6, 1434:11, 1438:17, 1445:2, 1446:16, 1446:17, 1456:23, 1457:5, 1457:13, 1458:7, 1469:22, 1472:14, 1473:7, 1474:1, 1487:20, 1488:2, 1488:11, 1488:20, 1489:4, 1489:12, 1489:15, 1490:8, 1490:9, 1490:10, 1495:9, 1495:19, 1495:22, 1496:2, 1496:10, 1496:14, 1497:3, 1498:12, 1499:16, 1501:25, 1502:2, 1502:9, 1502:11, 1502:20, 1502:23, 1503:14, 1503:20, 1503:21, 1504:11, 1505:8, 1505:12, 1507:3, 1507:6, 1507:10, 1507:16, 1507:19, 1507:22, 1508:4, 1508:5, 1508:6, 1508:9, 1508:13, 1508:18, 1508:25, 1513:16, 1514:17, 1515:10, 1517:6, 1518:2, 1519:23, 1520:19, 1520:21, 1526:18 cost-effective [14] - 1488:11, 1495:9, 1495:22, 1496:2, 1498:12, 1499:16, 1502:20, 1502:23, 1503:14, 1505:8, 1508:5, 1508:6, 1508:13, 1508:18 cost-effectiveness [1] - 1496:10 cost-saving [1] - 1517:6</p>	<p>costly [1] - 1472:5 costs [30] - 1434:13, 1435:5, 1446:14, 1460:19, 1461:18, 1461:21, 1488:19, 1488:22, 1489:18, 1489:21, 1490:2, 1497:23, 1498:7, 1498:16, 1499:3, 1499:8, 1499:9, 1499:19, 1499:21, 1499:22, 1499:23, 1500:1, 1501:2, 1502:16, 1514:12, 1514:13, 1519:18, 1519:25, 1520:16 Council [1] - 1436:12 counsel [3] - 1455:4, 1505:14, 1534:14 Counsel [1] - 1534:2 Counties [1] - 1419:18 counties [1] - 1434:24 countries [13] - 1433:6, 1433:9, 1433:21, 1448:4, 1460:6, 1460:14, 1460:15, 1461:1, 1462:5, 1462:6, 1462:23, 1463:1, 1472:3 country [7] - 1433:2, 1435:12, 1461:16, 1463:19, 1463:25, 1494:6, 1516:10 countryside [1] - 1477:3 County [1] - 1497:17 couple [10] - 1437:10, 1453:7, 1458:12, 1462:1, 1472:21, 1473:18, 1473:19, 1478:16, 1529:25 course [14] - 1436:19, 1499:14, 1513:8, 1513:11, 1514:15, 1514:24, 1515:1, 1516:18, 1517:1, 1517:5, 1520:3, 1520:10, 1522:25 courses [1] - 1436:22 COURT [2] - 1535:1, 1536:1 cover [1] - 1435:4 covered [1] - 1510:13 CRAMER [8] - 1464:14, 1466:9, 1474:24, 1512:11, 1515:19, 1531:17, 1533:19, 1533:25 Cramer [5] - 1418:5, 1418:11, 1466:7, 1466:10, 1512:9 create [2] - 1438:14, 1517:14 created [1] - 1530:22 creates [2] - 1433:24, 1460:2 credits [3] - 1488:19, 1490:25, 1491:2 criticize [1] - 1475:1 Cross [4] - 1418:4, 1418:5, 1418:9, 1418:10 CROSS [4] - 1436:6, 1455:1, 1492:6, 1497:11</p>	<p>cross [2] - 1490:17, 1492:3 Cross-examination [4] - 1418:4, 1418:5, 1418:9, 1418:10 cross-examination [2] - 1490:17, 1492:3 CROSS-EXAMINATION [4] - 1436:6, 1455:1, 1492:6, 1497:11 crossed [1] - 1503:19 cubic [6] - 1463:8, 1463:10, 1467:1, 1468:19, 1468:22, 1468:24 cumulative [1] - 1447:15 cumulatively [1] - 1447:13 current [2] - 1456:17, 1487:23 cushion [2] - 1495:20, 1496:1 customer [1] - 1483:4 customers [22] - 1434:15, 1450:20, 1476:7, 1476:16, 1476:17, 1476:23, 1477:2, 1477:4, 1477:9, 1477:18, 1477:22, 1483:15, 1484:8, 1501:3, 1502:14, 1503:3, 1503:5, 1513:25, 1514:14, 1515:18, 1517:12 cycle [5] - 1434:3, 1451:22, 1452:4, 1490:2, 1490:6 cycles [1] - 1455:22</p>	<p>1419:20, 1419:21, 1421:15, 1422:23 DANIELS [8] - 1464:8, 1464:10, 1464:12, 1464:17, 1464:20, 1483:22, 1505:17, 1505:23 Daniels [1] - 1421:16 DAS [1] - 1518:15 DAS-S5 [1] - 1518:15 data [23] - 1431:1, 1434:10, 1442:8, 1442:10, 1445:4, 1447:8, 1451:7, 1471:5, 1471:11, 1475:18, 1477:14, 1477:16, 1477:19, 1478:2, 1478:3, 1479:6, 1487:21, 1487:22, 1489:17, 1503:20, 1509:13, 1518:8, 1518:25 dates [2] - 1527:2, 1527:7 Dawn [1] - 1421:16 days [1] - 1512:15 deal [6] - 1437:10, 1469:22, 1480:8, 1493:13, 1514:12, 1514:23 dealing [2] - 1473:6, 1476:18 dealt [1] - 1465:11 DEASON [3] - 1418:8, 1485:22, 1533:24 Deason [17] - 1420:4, 1485:12, 1485:13, 1485:17, 1486:4, 1487:5, 1487:13, 1492:8, 1492:13, 1495:4, 1496:17, 1497:10, 1497:13, 1506:21, 1516:5, 1521:12, 1533:21 Deason's [1] - 1505:21 debt [12] - 1507:3, 1507:6, 1507:7, 1507:10, 1507:16, 1507:19, 1507:22, 1508:4, 1508:8, 1508:12, 1508:14, 1508:20 debt-to-equity [1] - 1508:20 decade [4] - 1456:5, 1459:15, 1471:8, 1471:13 decatherms [1] - 1484:18 December [1] - 1526:23 decision [8] - 1426:15, 1493:5, 1493:7, 1503:16, 1504:5, 1509:6, 1522:9, 1530:23 decisionmaker [1] - 1520:15 decisions [4] - 1458:6, 1458:8, 1497:15, 1513:4 decline [7] - 1432:16, 1432:19, 1459:9, 1459:11, 1460:24, 1470:6, 1471:16 declined [1] - 1471:15 declining [2] - 1432:15, 1459:9 decrease [2] - 1431:18,</p>
D			
<p>DAKOTA [1] - 1417:2 Dakota [43] - 1417:7, 1417:18, 1419:18, 1421:8, 1422:9, 1434:18, 1434:25, 1435:6, 1436:11, 1440:1, 1440:8, 1440:10, 1440:18, 1440:25, 1441:5, 1441:9, 1441:19, 1441:25, 1442:11, 1442:16, 1443:4, 1447:25, 1453:13, 1453:17, 1453:21, 1454:5, 1454:15, 1465:8, 1465:13, 1467:24, 1473:1, 1477:1, 1483:4, 1484:1, 1497:1, 1506:23, 1514:10, 1516:14, 1522:16, 1524:8, 1533:22, 1535:14, 1536:7 Dakota's [2] - 1439:9, 1465:15 Dakota-specific [1] - 1440:8 DALE [2] - 1418:3, 1422:12 Daniel [13] - 1418:22, 1418:23, 1419:3, 1419:6, 1419:9, 1419:11, 1419:13, 1419:15, 1419:17,</p>			

<p>1444:8 decreases [2] - 1445:14, 1459:19 deferred [1] - 1493:2 define [2] - 1444:13, 1469:6 defined [1] - 1467:5 definitions [2] - 1467:16, 1467:20 degree [15] - 1423:19, 1423:21, 1436:20, 1436:23, 1492:20, 1510:16, 1513:6, 1513:18, 1513:22, 1515:3, 1515:8, 1517:10, 1517:11, 1524:7 degrees [3] - 1436:14, 1436:17, 1436:21 deindustrialization [1] - 1471:22 delaying [1] - 1526:25 deliver [1] - 1533:24 Delivered [1] - 1446:17 delivered [6] - 1429:23, 1431:1, 1431:4, 1431:5, 1446:16 delivery [3] - 1446:14, 1523:16, 1526:21 demand [9] - 1444:19, 1446:20, 1447:6, 1447:21, 1452:25, 1469:1, 1471:2, 1471:7, 1471:12 demand-side [1] - 1452:25 demands [1] - 1461:22 demonstrate [2] - 1480:16, 1508:10 demonstrated [1] - 1488:10 denial [1] - 1494:25 Denise [2] - 1535:3, 1535:17 Department [3] - 1428:2, 1429:16, 1480:13 dependence [7] - 1444:1, 1444:5, 1445:24, 1446:5, 1450:19, 1450:22, 1493:19 dependency [1] - 1477:10 dependent [5] - 1462:16, 1476:19, 1496:22, 1497:2, 1514:6 depicts [1] - 1463:6 deployment [1] - 1494:19 depreciated [1] - 1515:15 described [1] - 1495:15 Description [3] - 1418:18, 1419:2, 1420:3 descriptive [1] - 1443:20 designed [1] - 1528:7 desirable [3] - 1445:15, 1445:21, 1445:25 detailed [2] - 1497:25, 1504:1 Determination [2] - 1417:5, 1417:8</p>	<p>determination [3] - 1421:7, 1487:16, 1498:23 determinative [1] - 1507:21 determine [4] - 1483:14, 1496:6, 1504:10, 1527:21 develop [5] - 1473:22, 1480:16, 1480:20, 1481:1, 1494:5 developed [2] - 1463:1, 1519:7 Development [1] - 1437:19 development [4] - 1469:7, 1493:20, 1523:25, 1531:6 developments [3] - 1430:9, 1487:23, 1512:1 develops [1] - 1460:15 deviation [1] - 1508:20 Dhabi [1] - 1433:8 difference [4] - 1457:10, 1483:6, 1487:11, 1530:19 different [9] - 1429:25, 1444:15, 1462:3, 1467:6, 1476:6, 1479:24, 1483:7, 1515:7, 1528:24 differently [1] - 1467:6 difficult [1] - 1513:3 difficulty [1] - 1428:20 dilutes [1] - 1483:13 dioxide [4] - 1489:3, 1492:16, 1509:2, 1509:9 DIRECT [3] - 1422:17, 1486:1, 1523:9 Direct [5] - 1418:4, 1418:9, 1418:14, 1418:19, 1420:4 direct [8] - 1435:18, 1436:25, 1440:5, 1454:8, 1486:15, 1501:13, 1507:1, 1524:11 direction [1] - 1473:15 director [2] - 1423:17, 1449:5 disadvantage [1] - 1520:13 disagree [1] - 1495:17 disallowances [1] - 1520:22 disasters [1] - 1462:8 discernible [1] - 1432:2 disclaimers [1] - 1466:21 disclosure [1] - 1531:8 discussion [4] - 1460:3, 1491:25, 1512:23, 1531:4 Discussion [1] - 1428:24 disparity [1] - 1490:3 dispatchable [1] - 1515:11 dispersed [1] - 1445:9 disruption [1] - 1427:18 disruptions [10] - 1461:4, 1461:6, 1461:7, 1461:9, 1461:10, 1461:13, 1461:24, 1462:2, 1462:10, 1462:14 distributed [1] - 1519:14</p>	<p>distribution [1] - 1477:6 disturbance [1] - 1428:22 diverse [1] - 1472:25 diversity [11] - 1435:15, 1443:12, 1443:13, 1443:23, 1444:3, 1444:8, 1444:9, 1444:13, 1445:14, 1446:1, 1472:17 Diversity [1] - 1444:14 diverted [1] - 1434:16 divided [1] - 1529:4 dividing [1] - 1529:3 Division [1] - 1417:7 DO [4] - 1535:5, 1535:9, 1536:3, 1536:5 doable [1] - 1469:22 docket [1] - 1451:14 document [1] - 1524:20 dollar [4] - 1430:19, 1431:7, 1431:22, 1434:8 Dollars [1] - 1419:5 dollars [3] - 1434:12, 1462:25, 1463:1 domestic [5] - 1427:20, 1430:8, 1432:11, 1432:19, 1461:14 Dominion [1] - 1497:17 done [16] - 1428:1, 1429:14, 1430:25, 1446:7, 1452:19, 1453:2, 1453:9, 1468:10, 1474:22, 1478:4, 1479:1, 1479:3, 1484:23, 1516:12, 1516:13, 1530:6 Donetsk [1] - 1438:15 down [11] - 1445:10, 1458:3, 1458:18, 1461:22, 1462:7, 1472:20, 1500:25, 1511:20, 1529:2, 1531:24, 1532:14 downsized [8] - 1487:17, 1488:10, 1489:16, 1489:18, 1502:22, 1504:11, 1504:16, 1530:13 downsizing [2] - 1500:20, 1502:19 Dr [1] - 1439:18 dramatically [1] - 1427:16 drilling [1] - 1450:1 dry [1] - 1469:10 DSM [5] - 1445:2, 1447:13, 1452:11, 1453:6, 1479:6 due [2] - 1472:1, 1502:18 duly [3] - 1422:13, 1485:23, 1523:7 during [4] - 1455:24, 1456:10, 1457:7, 1503:9</p>	<p style="text-align: center;">E</p> <p>early [8] - 1430:16, 1456:4, 1459:15, 1460:11, 1471:12, 1473:21, 1527:2, 1527:10 earned [1] - 1423:21 earnings [1] - 1435:3 easier [1] - 1472:7 easily [1] - 1459:25 East [1] - 1462:12 easy [8] - 1447:5, 1472:9, 1479:18, 1513:8, 1513:10, 1514:15, 1514:24, 1515:1 Economic [1] - 1437:19 economic [6] - 1423:10, 1445:25, 1446:6, 1452:17, 1462:14, 1462:20 economical [1] - 1472:21 economically [4] - 1442:23, 1445:15, 1445:20, 1468:3 economics [3] - 1436:17, 1452:19, 1467:21 Economics [1] - 1436:18 economist [1] - 1436:19 economy [2] - 1447:18, 1471:22 editorial [1] - 1473:12 educated [1] - 1471:6 educational [2] - 1423:18, 1524:6 effect [3] - 1443:9, 1508:21, 1528:3 effective [18] - 1445:3, 1488:11, 1495:9, 1495:22, 1496:2, 1498:12, 1499:16, 1502:20, 1502:23, 1503:14, 1503:21, 1504:11, 1505:8, 1508:5, 1508:6, 1508:13, 1508:18, 1520:19 effectively [3] - 1508:9, 1515:17, 1532:5 effectiveness [5] - 1438:18, 1447:10, 1489:5, 1496:10, 1496:15 effects [1] - 1426:13 efficiency [8] - 1444:22, 1445:5, 1445:7, 1452:11, 1452:24, 1453:6, 1458:11, 1519:13 efficient [2] - 1455:9, 1508:19 efficiently [2] - 1498:18, 1515:16 effort [1] - 1447:15 efforts [2] - 1445:4, 1480:15 Egypt [1] - 1460:13 EIA [5] - 1428:15, 1432:16,</p>
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<p>1474:10, 1474:16, 1474:25 EIA's [1] - 1466:19 EIS's [1] - 1478:3 either [10] - 1426:18, 1433:15, 1469:8, 1472:23, 1474:2, 1474:23, 1510:1, 1511:12, 1512:23, 1518:9 Electric [1] - 1419:7 electric [17] - 1426:3, 1429:23, 1431:2, 1437:1, 1438:4, 1438:9, 1445:13, 1446:19, 1455:11, 1456:13, 1458:5, 1471:13, 1477:4, 1482:19, 1483:25, 1487:23 electrical [1] - 1524:8 Electricity [1] - 1437:25 electricity [12] - 1433:24, 1435:9, 1435:19, 1447:6, 1470:4, 1471:8, 1472:18, 1475:18, 1477:7, 1477:23, 1482:14 elevated [1] - 1467:22 elsewhere [2] - 1444:5, 1481:19 EM [1] - 1437:16 embargo [1] - 1447:3 embargoes [1] - 1462:5 embedded [1] - 1468:1 emissions [3] - 1438:11, 1439:4, 1471:3 emphasis [1] - 1493:11 employed [3] - 1422:25, 1486:5, 1486:6 employee [1] - 1423:4 employment [1] - 1436:25 end [6] - 1428:22, 1474:2, 1496:18, 1501:3, 1507:15, 1522:5 endeavor [1] - 1493:17 energization [1] - 1526:9 Energy [20] - 1419:4, 1419:8, 1419:16, 1428:3, 1428:9, 1429:16, 1429:17, 1437:19, 1437:24, 1445:5, 1450:3, 1450:25, 1451:6, 1458:11, 1467:8, 1467:9, 1480:14, 1493:25, 1494:4, 1494:16 energy [41] - 1423:10, 1427:2, 1427:5, 1428:4, 1429:19, 1435:4, 1435:5, 1435:23, 1440:3, 1440:9, 1440:20, 1440:24, 1444:6, 1444:22, 1445:7, 1446:18, 1446:20, 1447:2, 1447:4, 1447:10, 1452:10, 1452:24, 1453:5, 1453:6, 1466:18, 1466:20, 1471:23, 1475:14,</p>	<p>1478:23, 1479:1, 1479:4, 1479:15, 1479:17, 1493:11, 1494:5, 1494:17, 1519:13, 1519:14, 1528:15, 1528:16, 1528:19 Energy's [1] - 1428:2 energy-intensive [1] - 1471:23 energy-related [1] - 1435:4 engage [3] - 1508:11, 1516:11, 1516:23 engaged [6] - 1493:16, 1494:13, 1510:17, 1511:5, 1516:24, 1517:25 engineering [4] - 1436:21, 1436:22, 1524:9, 1530:15 enhances [1] - 1496:10 enormous [1] - 1431:19 entail [3] - 1452:18, 1474:20, 1474:21 entered [5] - 1437:3, 1447:24, 1448:1, 1451:1, 1518:15 entirely [1] - 1461:14 entitled [1] - 1525:24 environmental [7] - 1423:10, 1438:20, 1447:2, 1469:23, 1472:15, 1488:22, 1520:7 environmentalist [1] - 1479:15 environmentally [1] - 1480:24 envy [1] - 1513:2 EPRI [1] - 1489:13 equity [14] - 1495:12, 1495:18, 1495:19, 1495:25, 1496:7, 1496:8, 1498:4, 1507:20, 1507:21, 1507:23, 1508:2, 1508:3, 1508:14, 1508:20 escalation [1] - 1426:6 escalations [1] - 1488:21 escaped [1] - 1510:8 especially [2] - 1466:16, 1516:6 established [2] - 1518:22, 1522:8 estimate [3] - 1450:10, 1450:11, 1526:23 estimated [2] - 1502:2, 1526:19 estimates [1] - 1526:18 Europe [3] - 1433:16, 1459:25, 1462:15 evaluate [1] - 1496:14 evaluation [2] - 1519:24, 1520:16 events [2] - 1427:17, 1454:3 Everywhere [1] - 1441:22 everywhere [4] - 1427:19,</p>	<p>1441:16, 1454:1, 1454:20 evidence [9] - 1439:7, 1440:17, 1446:22, 1447:20, 1447:24, 1447:25, 1450:20, 1453:9, 1460:23 evolution [2] - 1455:13, 1456:10 exacerbate [1] - 1434:20 EXAMINATION [17] - 1422:17, 1436:6, 1455:1, 1466:8, 1475:7, 1478:13, 1480:4, 1486:1, 1492:6, 1497:11, 1500:7, 1506:19, 1512:10, 1516:3, 1523:9, 1529:23, 1531:21 examination [14] - 1418:4, 1418:4, 1418:5, 1418:6, 1418:7, 1418:9, 1418:9, 1418:10, 1418:12, 1418:14, 1418:15, 1436:3, 1490:17, 1492:3 Examination [6] - 1418:5, 1418:6, 1418:10, 1418:11, 1418:11, 1418:14 examinations [1] - 1427:7 examined [3] - 1422:13, 1485:23, 1523:7 example [7] - 1434:1, 1451:8, 1473:1, 1528:6, 1528:10, 1528:11, 1529:5 excellent [2] - 1522:8, 1533:18 except [1] - 1472:2 excess [1] - 1474:4 excessive [1] - 1499:23 excuse [1] - 1424:7 Excuse [3] - 1423:8, 1424:7, 1439:13 Executive [1] - 1449:19 exhibit [16] - 1425:16, 1439:21, 1448:7, 1448:17, 1449:2, 1449:16, 1464:4, 1465:14, 1478:1, 1482:12, 1482:21, 1483:24, 1504:3, 1504:22, 1518:21, 1525:14 Exhibit [27] - 1419:3, 1419:6, 1419:9, 1419:11, 1419:13, 1419:15, 1419:17, 1419:21, 1421:20, 1424:5, 1424:6, 1440:5, 1441:4, 1448:15, 1448:21, 1463:5, 1464:25, 1475:13, 1486:16, 1486:25, 1487:4, 1505:15, 1505:21, 1518:14, 1524:16, 1525:19 Exhibits [4] - 1421:20, 1424:9, 1424:25, 1425:8 exhibits [5] - 1439:18, 1464:19, 1501:18, 1505:18</p>	<p>EXHIBITS [2] - 1418:17, 1420:2 exist [3] - 1509:19, 1509:21, 1510:1 existing [3] - 1467:15, 1493:21, 1493:22 expand [1] - 1489:11 expanded [1] - 1443:7 expansion [3] - 1496:23, 1497:3, 1505:6 expansive [1] - 1465:9 expect [2] - 1460:17, 1477:15 expected [1] - 1448:17 expects [1] - 1511:2 expenditures [1] - 1435:4 expensive [1] - 1472:8 experience [5] - 1447:1, 1449:14, 1479:8, 1480:1, 1528:3 expert [1] - 1528:4 expiration [1] - 1491:8 expire [1] - 1491:2 explain [4] - 1456:25, 1466:22, 1495:14, 1532:4 explained [1] - 1490:12 explanation [3] - 1488:13, 1488:18, 1489:9 explanations [1] - 1492:1 export [1] - 1460:6 expose [1] - 1514:19 exposes [1] - 1439:10 exposing [1] - 1513:21 expressed [1] - 1508:25 extension [1] - 1490:24 extent [1] - 1497:19 externalities [1] - 1520:7 extrapolate [1] - 1478:7 extreme [2] - 1430:23, 1435:11 extremely [2] - 1503:7, 1515:14</p>
F			
<p>face [1] - 1479:19 facilitates [1] - 1516:25 facilities [9] - 1474:1, 1519:20, 1526:13, 1526:21, 1526:22, 1527:8, 1527:9, 1530:7, 1530:10 facilities' [1] - 1527:2 facility [1] - 1528:20 fact [16] - 1422:7, 1430:5, 1442:5, 1450:12, 1453:12, 1453:16, 1471:14, 1478:1, 1492:18, 1507:17, 1510:20, 1511:4, 1514:23, 1515:2, 1515:10, 1531:6</p>			

<p>factor [7] - 1435:6, 1491:3, 1491:5, 1528:21, 1529:2, 1529:3, 1529:4</p> <p>factors [7] - 1427:21, 1434:19, 1452:5, 1471:19, 1472:1, 1472:16, 1509:1</p> <p>facts [1] - 1450:2</p> <p>failure [3] - 1519:25, 1520:6, 1520:11</p> <p>fair [3] - 1494:15, 1504:19, 1508:15</p> <p>fairly [6] - 1428:16, 1430:6, 1431:13, 1457:9, 1460:23, 1477:1</p> <p>fall [3] - 1459:16, 1459:17, 1500:17</p> <p>falling [1] - 1459:15</p> <p>Falls [6] - 1526:5, 1526:6, 1528:13, 1530:3, 1530:8, 1530:12</p> <p>false [3] - 1422:6, 1520:1, 1520:8</p> <p>familiar [7] - 1437:18, 1467:25, 1468:3, 1468:9, 1469:16, 1493:3, 1497:15</p> <p>families [1] - 1435:2</p> <p>family's [1] - 1435:22</p> <p>far [10] - 1426:4, 1426:22, 1427:15, 1427:21, 1456:23, 1462:15, 1476:21, 1477:11, 1531:24</p> <p>farms [1] - 1477:6</p> <p>fascinated [1] - 1466:14</p> <p>favor [2] - 1445:14, 1455:16</p> <p>favorable [1] - 1511:8</p> <p>feasibility [1] - 1452:19</p> <p>feasible [1] - 1469:3</p> <p>federal [1] - 1455:18</p> <p>feedstock [1] - 1473:5</p> <p>feet [6] - 1463:8, 1463:10, 1467:1, 1468:19, 1468:22, 1468:24</p> <p>fell [1] - 1456:5</p> <p>felony [1] - 1422:9</p> <p>fertilizer [2] - 1473:1, 1473:3</p> <p>few [9] - 1427:25, 1430:15, 1436:13, 1453:5, 1458:14, 1465:10, 1466:11, 1467:19, 1492:10</p> <p>field [1] - 1479:1</p> <p>figure [1] - 1442:6</p> <p>file [1] - 1423:23</p> <p>filed [9] - 1421:19, 1464:4, 1464:19, 1482:12, 1499:13, 1504:2, 1504:22, 1505:15, 1505:18</p> <p>fill [2] - 1450:6, 1453:8</p> <p>filled [1] - 1452:9</p> <p>final [2] - 1439:24, 1511:10</p> <p>finance [2] - 1509:22,</p>	<p>1517:25</p> <p>financeable [2] - 1509:16</p> <p>financial [4] - 1488:7, 1507:7, 1509:20, 1513:14</p> <p>financing [13] - 1488:21, 1508:19, 1509:3, 1509:6, 1509:12, 1509:19, 1509:24, 1510:3, 1511:7, 1511:18, 1512:2, 1517:15, 1519:11</p> <p>fine [9] - 1422:10, 1429:7, 1436:9, 1475:1, 1477:13, 1481:7, 1501:11, 1506:13, 1518:12</p> <p>fingertips [2] - 1463:20, 1468:18</p> <p>finished [1] - 1437:2</p> <p>finite [1] - 1473:11</p> <p>fired [8] - 1426:23, 1445:11, 1451:25, 1461:4, 1461:5, 1492:22, 1493:19, 1516:7</p> <p>firm [9] - 1423:9, 1423:13, 1423:15, 1437:3, 1486:6, 1486:10, 1486:11, 1486:12, 1497:21</p> <p>firms [1] - 1517:22</p> <p>first [10] - 1422:13, 1430:5, 1447:3, 1448:10, 1466:23, 1470:12, 1495:16, 1501:15, 1511:12, 1512:23</p> <p>First [9] - 1423:2, 1423:3, 1423:6, 1423:7, 1423:8, 1434:24, 1440:23, 1475:21, 1489:12</p> <p>fit [1] - 1512:2</p> <p>five [5] - 1422:11, 1478:5, 1488:7, 1489:1, 1521:16</p> <p>fixable [1] - 1461:24</p> <p>fixed [2] - 1473:23, 1488:19</p> <p>flies [1] - 1479:19</p> <p>floor [1] - 1474:13</p> <p>Florida [13] - 1486:7, 1486:9, 1493:3, 1493:4, 1493:5, 1493:14, 1493:18, 1493:23, 1493:24, 1494:22, 1514:9, 1514:10, 1516:13</p> <p>fluctuate [1] - 1514:7</p> <p>focus [6] - 1427:3, 1436:23, 1459:13, 1477:8, 1481:8, 1504:10</p> <p>focused [2] - 1480:18, 1488:3</p> <p>focuses [1] - 1431:15</p> <p>follow [1] - 1478:16</p> <p>follow-up [1] - 1478:16</p> <p>followed [1] - 1502:5</p> <p>following [1] - 1450:7</p> <p>follows [4] - 1421:3, 1422:14, 1485:24, 1523:8</p>	<p>followup [5] - 1482:7, 1482:9, 1521:1, 1521:6, 1521:7</p> <p>Followup [7] - 1478:11, 1480:3, 1515:22, 1515:24, 1516:1, 1531:18, 1532:24</p> <p>forced [1] - 1430:9</p> <p>forecast [12] - 1428:15, 1429:17, 1429:25, 1430:3, 1430:12, 1430:15, 1430:16, 1430:17, 1430:20, 1450:4, 1462:23, 1488:20</p> <p>forecasting [1] - 1474:10</p> <p>Forecasts [2] - 1419:4, 1419:7</p> <p>forecasts [5] - 1427:5, 1427:24, 1429:18, 1466:18, 1474:18</p> <p>foregoing [4] - 1535:6, 1535:10, 1536:3, 1536:5</p> <p>foreign [1] - 1448:6</p> <p>formally [1] - 1511:14</p> <p>former [1] - 1455:12</p> <p>forms [1] - 1476:2</p> <p>formulas [1] - 1489:13</p> <p>fortuitous [1] - 1534:6</p> <p>forward [7] - 1487:6, 1500:20, 1514:16, 1514:20, 1515:2, 1515:6, 1516:25</p> <p>founded [2] - 1423:13, 1450:11</p> <p>founder [1] - 1423:4</p> <p>four [6] - 1428:13, 1430:5, 1462:11, 1488:6, 1523:19, 1528:17</p> <p>FPL [8] - 1493:7, 1493:9, 1493:15, 1493:25, 1494:4, 1494:5, 1494:16, 1533:21</p> <p>free [1] - 1496:6</p> <p>frees [1] - 1530:20</p> <p>frequently [2] - 1434:10, 1469:6</p> <p>front [1] - 1424:1</p> <p>fuel [26] - 1426:17, 1426:18, 1427:4, 1434:6, 1434:13, 1434:20, 1435:14, 1435:18, 1445:14, 1455:11, 1456:1, 1456:3, 1456:6, 1456:13, 1456:17, 1458:7, 1461:3, 1472:18, 1488:6, 1488:20, 1499:8, 1514:9, 1514:11, 1514:13, 1514:17, 1515:10</p> <p>fueled [1] - 1435:19</p> <p>fuels [5] - 1433:19, 1461:8, 1469:18, 1469:21, 1514:6</p> <p>full [4] - 1520:1, 1520:8, 1520:14, 1531:8</p>	<p>fully [1] - 1446:21</p> <p>function [1] - 1523:21</p> <p>functioning [1] - 1460:18</p> <p>funders [1] - 1438:5</p> <p>FURTHER [2] - 1535:9, 1536:5</p> <p>future [13] - 1426:5, 1428:6, 1428:10, 1428:12, 1430:12, 1430:18, 1432:7, 1434:7, 1469:24, 1491:11, 1496:4, 1499:5, 1499:8</p> <p>Future [1] - 1430:13</p>
G			
			<p>gained [1] - 1512:17</p> <p>gains [1] - 1444:23</p> <p>gap [1] - 1453:8</p> <p>gas [160] - 1426:5, 1426:17, 1426:20, 1426:21, 1427:3, 1427:8, 1427:11, 1427:14, 1427:22, 1427:24, 1428:11, 1429:23, 1430:3, 1430:8, 1430:12, 1430:20, 1430:22, 1431:1, 1431:11, 1431:19, 1431:21, 1432:6, 1432:7, 1432:10, 1432:25, 1433:2, 1433:4, 1433:11, 1433:15, 1433:17, 1433:20, 1433:23, 1434:3, 1434:5, 1434:8, 1434:11, 1435:9, 1435:13, 1435:16, 1435:19, 1438:11, 1438:16, 1438:22, 1439:4, 1439:10, 1440:2, 1440:10, 1440:12, 1440:19, 1441:1, 1441:3, 1441:5, 1441:10, 1441:13, 1441:17, 1441:23, 1442:2, 1442:5, 1442:13, 1442:18, 1442:25, 1448:4, 1449:9, 1449:19, 1449:24, 1450:12, 1450:19, 1450:22, 1450:25, 1451:11, 1451:22, 1452:4, 1452:9, 1452:11, 1452:13, 1452:23, 1452:25, 1453:14, 1453:18, 1454:8, 1454:18, 1454:19, 1455:9, 1455:18, 1455:20, 1455:22, 1455:23, 1456:6, 1456:11, 1456:14, 1456:21, 1457:5, 1458:3, 1458:11, 1458:16, 1458:19, 1459:1, 1461:4, 1461:11, 1462:2, 1462:16, 1462:22, 1463:2, 1463:7, 1463:9, 1463:22, 1466:16, 1466:18, 1466:24, 1467:1, 1468:5, 1468:9, 1468:16,</p>

<p>1469:4, 1469:17, 1470:3, 1470:7, 1470:22, 1470:23, 1470:25, 1471:1, 1471:7, 1471:14, 1471:18, 1472:2, 1472:3, 1472:9, 1472:10, 1472:23, 1473:2, 1473:5, 1474:13, 1475:19, 1476:19, 1477:5, 1477:10, 1477:11, 1477:18, 1477:23, 1481:10, 1481:11, 1481:17, 1481:22, 1482:1, 1482:3, 1482:14, 1482:17, 1483:5, 1483:13, 1483:15, 1484:1, 1490:3, 1492:16, 1492:22, 1493:19, 1494:24, 1500:14, 1509:24, 1514:7</p> <p>Gas [7] - 1419:3, 1419:7, 1419:10, 1419:12, 1419:14, 1419:21, 1467:7</p> <p>gas-fired [3] - 1461:4, 1492:22, 1493:19</p> <p>gas-fueled [1] - 1435:19</p> <p>gas-rich [1] - 1433:20</p> <p>gas/wind [1] - 1527:25</p> <p>gases [1] - 1438:25</p> <p>Gasification [1] - 1469:20</p> <p>gasification [1] - 1470:5</p> <p>gasoline [1] - 1475:25</p> <p>general [8] - 1443:1, 1452:21, 1475:20, 1476:10, 1479:12, 1479:14, 1510:3, 1512:12</p> <p>generally [6] - 1422:8, 1427:21, 1443:4, 1494:3, 1511:23, 1514:12</p> <p>generated [1] - 1472:19</p> <p>generating [6] - 1434:14, 1455:20, 1470:4, 1472:18, 1495:8, 1528:20</p> <p>Generating [1] - 1421:10</p> <p>generation [33] - 1426:3, 1426:17, 1426:24, 1435:21, 1439:12, 1444:25, 1445:12, 1446:22, 1450:19, 1450:23, 1452:23, 1455:11, 1456:1, 1461:5, 1471:7, 1488:12, 1490:25, 1492:22, 1493:20, 1495:2, 1501:25, 1505:9, 1510:4, 1516:5, 1519:16, 1519:20, 1519:24, 1526:16, 1527:11, 1528:9, 1528:14, 1530:9</p> <p>Generators [1] - 1419:7</p> <p>generators [2] - 1433:24, 1530:21</p> <p>Gentlemen [1] - 1505:14</p> <p>genuine [2] - 1453:20,</p>	<p>1517:15</p> <p>geologic [1] - 1467:12</p> <p>given [5] - 1491:22, 1500:20, 1505:12, 1507:6, 1530:13</p> <p>Given [1] - 1505:9</p> <p>glad [1] - 1501:9</p> <p>Glad [1] - 1506:25</p> <p>Glades [2] - 1493:6, 1494:25</p> <p>Global [2] - 1419:22, 1437:14</p> <p>global [2] - 1433:18, 1480:8</p> <p>government [3] - 1423:11, 1447:8, 1455:18</p> <p>grab [1] - 1501:12</p> <p>Graduate [1] - 1423:22</p> <p>Granite [6] - 1526:4, 1526:5, 1528:12, 1530:3, 1530:8, 1530:11</p> <p>granting [1] - 1531:11</p> <p>graph [5] - 1428:14, 1429:11, 1431:24, 1432:6, 1457:7</p> <p>great [4] - 1426:15, 1493:13, 1514:12, 1514:22</p> <p>greater [8] - 1427:7, 1427:8, 1434:22, 1435:3, 1443:2, 1470:3, 1495:7, 1513:18</p> <p>greatest [1] - 1461:11</p> <p>greenhouse [6] - 1426:5, 1438:10, 1438:16, 1438:22, 1438:25, 1439:4</p> <p>Greig [2] - 1490:5, 1490:9</p> <p>Greig's [2] - 1490:19, 1501:7</p> <p>ground [1] - 1443:8</p> <p>Group [2] - 1417:8, 1494:5</p> <p>group [2] - 1438:3, 1521:22</p> <p>grouping [1] - 1442:4</p> <p>groups [1] - 1467:8</p> <p>grow [3] - 1448:18, 1449:6, 1450:8</p> <p>growing [5] - 1432:18, 1432:23, 1447:19, 1471:6, 1516:10</p> <p>grows [1] - 1474:3</p> <p>growth [5] - 1427:10, 1446:19, 1447:21, 1469:1, 1471:12</p> <p>Guerrero [21] - 1418:4, 1418:6, 1418:9, 1418:14, 1418:15, 1421:13, 1422:15, 1464:6, 1478:11, 1478:15, 1487:2, 1492:4, 1506:12, 1507:3, 1515:24, 1521:6, 1521:9, 1521:15, 1522:12, 1523:4, 1531:18</p> <p>GUERRERO [49] - 1421:14, 1422:16, 1422:18, 1424:24, 1425:2, 1425:10, 1436:2, 1439:13, 1443:14, 1448:8, 1448:13, 1448:24, 1451:16, 1454:10,</p>	<p>1464:16, 1464:18, 1464:22, 1478:12, 1478:14, 1480:2, 1484:13, 1484:23, 1487:1, 1492:5, 1492:7, 1497:7, 1497:10, 1505:25, 1506:3, 1506:13, 1515:25, 1518:17, 1521:10, 1521:14, 1522:13, 1523:5, 1523:10, 1524:25, 1525:7, 1525:12, 1525:21, 1529:14, 1531:19, 1531:22, 1532:18, 1533:4, 1533:7, 1534:5, 1534:12</p> <p>guess [8] - 1451:16, 1473:8, 1473:9, 1476:13, 1476:16, 1477:15, 1477:19, 1530:17</p> <p>guide [1] - 1519:10</p> <p>Gulf [1] - 1462:9</p>	<p>1490:18, 1490:23, 1491:14, 1491:17, 1496:19</p> <p>Heidell's [1] - 1495:17</p> <p>help [3] - 1435:21, 1464:6, 1504:24</p> <p>helpful [2] - 1425:21, 1483:19</p> <p>Hence [1] - 1435:20</p> <p>HEREBY [4] - 1535:5, 1535:9, 1536:3, 1536:5</p> <p>herein [1] - 1421:1</p> <p>hereinbefore [2] - 1535:7, 1536:4</p> <p>high [5] - 1430:22, 1514:17, 1516:15, 1517:8, 1525:24</p> <p>high-capital [1] - 1516:15</p> <p>higher [27] - 1426:20, 1426:21, 1430:13, 1431:12, 1434:13, 1434:14, 1434:16, 1435:8, 1440:2, 1440:18, 1440:25, 1441:10, 1449:24, 1456:23, 1460:25, 1461:3, 1470:3, 1473:7, 1474:6, 1477:11, 1495:19, 1495:25, 1496:12, 1507:19, 1507:20, 1508:2</p> <p>Higher [1] - 1434:13</p> <p>highest [1] - 1473:21</p> <p>historic [2] - 1430:25, 1434:10</p> <p>historical [2] - 1427:4, 1479:19</p> <p>Historical [1] - 1419:12</p> <p>historically [1] - 1449:25</p> <p>History [1] - 1419:3</p> <p>history [2] - 1436:25, 1479:22</p> <p>hit [2] - 1435:17, 1462:9</p> <p>hmm [1] - 1470:17</p> <p>hold [3] - 1433:11, 1468:13, 1503:3</p> <p>holders [1] - 1433:17</p> <p>holding [1] - 1450:4</p> <p>holds [1] - 1432:24</p> <p>home [5] - 1442:13, 1442:18, 1455:10, 1455:12, 1533:20</p> <p>HON [1] - 1417:22</p> <p>honesty [1] - 1493:13</p> <p>Honor [16] - 1421:14, 1422:16, 1424:24, 1436:3, 1464:23, 1486:24, 1492:5, 1497:8, 1505:25, 1521:14, 1522:13, 1524:25, 1529:15, 1531:20, 1532:19, 1533:4</p> <p>hope [3] - 1458:13, 1458:14, 1479:25</p> <p>hopefully [2] - 1480:16, 1498:19</p>
		H	
		<p>half [7] - 1430:14, 1431:14, 1447:6, 1507:10, 1507:16, 1512:15, 1528:17</p> <p>hand [1] - 1427:19</p> <p>handful [1] - 1433:20</p> <p>hang [1] - 1459:25</p> <p>happy [2] - 1436:1, 1464:1</p> <p>hard [5] - 1473:6, 1474:10, 1474:11, 1474:20, 1480:18</p> <p>harder [1] - 1471:10</p> <p>heads [1] - 1421:17</p> <p>heads-up [1] - 1421:17</p> <p>hear [9] - 1421:23, 1429:2, 1436:8, 1436:9, 1458:25, 1460:3, 1491:17, 1527:19</p> <p>heard [5] - 1426:4, 1458:22, 1458:23, 1473:16, 1491:18</p> <p>hearing [17] - 1428:21, 1475:17, 1479:17, 1490:14, 1500:11, 1500:17, 1501:3, 1503:10, 1512:24, 1522:6, 1527:16, 1527:17, 1531:10, 1531:13, 1533:18, 1534:8</p> <p>HEARING [1] - 1417:13</p> <p>hearings [5] - 1421:6, 1479:5, 1485:14, 1522:21, 1531:5</p> <p>heart [1] - 1479:13</p> <p>heat [7] - 1443:8, 1452:5, 1475:19, 1477:7, 1477:23</p> <p>heating [6] - 1435:10, 1442:13, 1442:19, 1455:10, 1455:12, 1476:20</p> <p>heavy [1] - 1479:13</p> <p>Heidell [9] - 1490:4, 1490:5, 1490:12, 1490:16,</p>	

<p>Hormuz [1] - 1462:12 hour [7] - 1502:3, 1502:6, 1502:7, 1502:10, 1502:12, 1502:19, 1503:6 hours [2] - 1484:18, 1528:18 Household [2] - 1419:16, 1419:18 household [9] - 1434:17, 1435:1, 1435:3, 1435:15, 1440:11, 1444:12, 1475:14, 1475:18, 1483:11 households [3] - 1435:6, 1435:17, 1483:12 hundred [1] - 1430:19 hundred-dollar-plus [1] - 1430:19 hydro [3] - 1458:11, 1458:16 hyphenated [1] - 1423:3 hypothesis [1] - 1477:15 hypothetical [1] - 1470:13</p>	<p>illustration [2] - 1434:1, 1475:2 imagine [1] - 1430:20 impact [3] - 1452:6, 1471:6, 1508:23 impacting [1] - 1509:3 impacts [9] - 1434:21, 1441:16, 1441:18, 1441:22, 1441:24, 1469:23, 1469:25, 1491:12, 1509:9 implement [2] - 1438:10, 1480:16 implies [1] - 1481:10 import [1] - 1449:14 important [9] - 1427:18, 1432:9, 1432:22, 1459:20, 1460:16, 1502:24, 1516:22, 1516:23, 1517:23 importantly [1] - 1433:14 imported [1] - 1462:16 importing [1] - 1453:21 imports [17] - 1432:12, 1432:14, 1432:20, 1448:6, 1448:20, 1449:21, 1454:2, 1459:1, 1459:6, 1459:8, 1459:10, 1459:14, 1459:21, 1460:4, 1460:8, 1460:10, 1460:24 Imports [1] - 1419:10 impression [1] - 1452:22 impressions [1] - 1447:23 imprisonment [1] - 1422:10 improved [1] - 1455:24 imprudent [1] - 1500:2 in-service [2] - 1527:2, 1527:7 inactivity [1] - 1450:1 inadequate [1] - 1520:16 inappropriate [2] - 1500:1, 1507:4 Inc [1] - 1417:8 inclination [1] - 1514:16 include [4] - 1438:24, 1475:23, 1475:25, 1488:18 included [6] - 1446:22, 1490:6, 1497:20, 1497:24, 1519:19, 1520:23 includes [1] - 1424:12 including [1] - 1438:16 Including [2] - 1425:1, 1425:2 inclusive [1] - 1425:9 income [6] - 1434:15, 1435:1, 1435:2, 1507:22, 1507:25, 1508:2 Income [2] - 1419:18, 1507:23 incorporate [1] - 1511:22 increase [17] - 1431:13,</p>	<p>1431:18, 1439:4, 1444:1, 1444:2, 1444:5, 1444:8, 1444:9, 1445:25, 1448:20, 1449:21, 1450:25, 1470:15, 1471:2, 1503:22, 1526:23, 1526:24 increased [7] - 1426:17, 1435:5, 1449:14, 1455:24, 1456:22, 1457:17, 1499:17 increases [3] - 1449:15, 1502:18, 1502:19 increasing [5] - 1430:4, 1450:18, 1450:22, 1457:16, 1530:24 increasingly [6] - 1432:8, 1432:9, 1450:14, 1454:19, 1460:16, 1471:25 increment [2] - 1506:5, 1506:7 incremental [3] - 1456:23, 1457:5, 1457:13 incurred [3] - 1499:4, 1499:20, 1508:12 incurring [1] - 1493:16 indeed [2] - 1450:21, 1487:12 Independent [1] - 1439:9 India [1] - 1433:16 indicate [2] - 1434:23, 1440:25 indicated [9] - 1489:20, 1491:20, 1494:10, 1504:6, 1505:7, 1507:18, 1508:4, 1535:8, 1536:4 indicating [2] - 1459:8, 1517:23 indication [1] - 1503:13 industrial [3] - 1455:10, 1471:14, 1471:16 industries [2] - 1471:23, 1473:6 industry [8] - 1437:1, 1438:2, 1471:17, 1472:8, 1473:4, 1473:22, 1479:8, 1487:23 inexpensive [1] - 1472:4 inflation [1] - 1526:25 Information [6] - 1419:4, 1428:3, 1428:10, 1429:17, 1450:3, 1467:9 information [13] - 1479:9, 1487:20, 1491:16, 1498:1, 1499:13, 1502:15, 1504:1, 1506:8, 1506:10, 1509:9, 1512:1, 1520:14, 1522:2 informed [3] - 1485:16, 1511:17, 1522:23 inherently [1] - 1474:19 initial [1] - 1526:9 input [2] - 1516:20, 1533:18 inputs [7] - 1473:7, 1488:2,</p>	<p>1488:4, 1488:5, 1488:6, 1488:7 instability [3] - 1456:7, 1456:15, 1463:3 install [1] - 1528:21 Instead [2] - 1432:17, 1470:18 instead [4] - 1434:1, 1435:13, 1470:13, 1470:24 Institute [1] - 1423:20 insulated [1] - 1442:24 intended [1] - 1527:9 intensive [4] - 1471:23, 1495:8, 1495:24, 1513:13 intent [1] - 1518:24 interconnect [1] - 1528:23 interconnection [3] - 1526:16, 1526:21, 1530:5 interest [4] - 1421:10, 1508:21, 1513:25, 1514:3 interested [1] - 1500:9 interestingly [1] - 1431:24 intermittent [1] - 1529:4 International [1] - 1467:9 international [3] - 1427:5, 1433:21, 1450:15 internationally [1] - 1494:7 Internet [2] - 1458:23, 1527:16 interruptions [1] - 1461:23 intervenor [3] - 1436:11, 1513:12, 1533:10 Intervenor [1] - 1533:11 introduce [1] - 1426:1 investment [8] - 1499:18, 1500:19, 1510:4, 1510:15, 1511:2, 1517:22, 1518:22, 1533:23 investor [1] - 1501:24 investor's [1] - 1520:18 investor-owned [1] - 1501:24 involved [8] - 1426:12, 1438:23, 1503:4, 1513:20, 1517:9, 1517:10, 1517:14, 1520:15 involving [4] - 1493:4, 1493:15, 1519:13, 1519:15 Iran [4] - 1433:7, 1454:3, 1454:8, 1454:15 Iraq [1] - 1433:9 iron [1] - 1471:24 IRP [1] - 1490:14 ISO [3] - 1427:6, 1526:17, 1530:6 issue [3] - 1448:5, 1469:15, 1472:17 Issues [1] - 1469:22 itself [3] - 1444:4, 1469:21, 1531:13</p>
I			
<p>ICF [1] - 1423:16 IDC [1] - 1490:7 idea [7] - 1454:7, 1464:2, 1465:7, 1466:23, 1503:20, 1514:1, 1529:13 identified [6] - 1424:4, 1424:13, 1430:1, 1486:16, 1489:8, 1493:9 identify [1] - 1438:9 identifying [1] - 1438:16 IGCC [1] - 1469:20 Il [60] - 1419:19, 1421:10, 1421:24, 1426:8, 1426:11, 1426:16, 1434:2, 1434:19, 1434:25, 1435:7, 1435:14, 1439:3, 1443:12, 1443:13, 1443:19, 1443:23, 1443:25, 1444:21, 1450:20, 1451:10, 1452:1, 1452:2, 1452:7, 1452:12, 1457:21, 1470:14, 1470:19, 1470:24, 1481:17, 1487:17, 1488:1, 1488:11, 1488:15, 1489:15, 1491:21, 1495:8, 1495:21, 1495:23, 1496:4, 1496:11, 1496:21, 1498:8, 1499:7, 1499:14, 1499:18, 1500:13, 1502:1, 1502:5, 1502:11, 1504:17, 1504:18, 1505:7, 1505:11, 1507:18, 1509:23, 1517:7, 1523:24, 1527:4, 1527:12 Il's [2] - 1489:4, 1489:12 Ill [1] - 1417:19 illegal [1] - 1455:19</p>			

J	<p>Klein ^[41] - 1418:22, 1418:23, 1419:3, 1419:6, 1419:9, 1419:11, 1419:13, 1419:15, 1419:17, 1419:20, 1419:21, 1421:15, 1421:19, 1421:22, 1422:2, 1422:3, 1422:19, 1422:23, 1423:24, 1424:16, 1424:22, 1425:10, 1425:14, 1428:18, 1428:25, 1436:2, 1436:8, 1444:13, 1445:23, 1448:17, 1451:17, 1454:6, 1455:3, 1466:10, 1475:9, 1478:15, 1480:6, 1484:24, 1484:25, 1485:2</p> <p>Klein's ^[3] - 1425:3, 1448:15, 1483:10</p> <p>knowledge ^[2] - 1485:15, 1522:22</p> <p>known ^[1] - 1469:8</p> <p>knows ^[1] - 1494:16</p> <p>Kuntz ^[1] - 1482:10</p> <p>KUNTZ ^[11] - 1482:11, 1482:23, 1483:2, 1483:9, 1483:21, 1483:23, 1484:5, 1484:7, 1484:12, 1484:15, 1533:6</p> <p>kV ^[11] - 1526:1, 1526:4, 1526:7, 1526:9, 1530:3, 1530:6, 1530:10, 1532:8, 1532:11, 1532:12</p> <p>kW ^[3] - 1490:5, 1490:7, 1490:10</p> <p>Kyoto ^[1] - 1437:15</p>	<p>1496:1, 1504:17</p> <p>largest ^[3] - 1465:13, 1493:18, 1494:10</p> <p>last ^[17] - 1427:25, 1429:18, 1437:4, 1442:7, 1449:2, 1465:10, 1466:22, 1467:18, 1471:8, 1473:19, 1500:17, 1521:23, 1523:13, 1527:5, 1533:5, 1534:7, 1534:12</p> <p>late ^[7] - 1464:4, 1464:19, 1482:12, 1504:2, 1504:22, 1505:15, 1505:18</p> <p>late-filed ^[7] - 1464:4, 1464:19, 1482:12, 1504:2, 1504:22, 1505:15, 1505:18</p> <p>lately ^[1] - 1473:6</p> <p>latest ^[1] - 1494:9</p> <p>law ^[1] - 1422:5</p> <p>LAW ^[1] - 1417:22</p> <p>lead ^[1] - 1426:16</p> <p>leading ^[1] - 1519:9</p> <p>leads ^[1] - 1445:17</p> <p>least ^[5] - 1429:4, 1471:6, 1482:12, 1497:3, 1517:2</p> <p>least-cost ^[1] - 1497:3</p> <p>leave ^[1] - 1474:3</p> <p>leaving ^[1] - 1521:25</p> <p>led ^[2] - 1438:13, 1438:19</p> <p>left ^[1] - 1460:1</p> <p>Less ^[1] - 1452:17</p> <p>less ^[21] - 1427:21, 1435:20, 1443:5, 1444:20, 1447:15, 1452:8, 1452:12, 1452:16, 1460:16, 1469:13, 1472:7, 1496:8, 1503:6, 1504:6, 1513:11, 1513:12, 1513:13, 1513:14, 1514:5, 1520:17, 1520:21</p> <p>level ^[8] - 1430:7, 1467:12, 1503:16, 1503:17, 1504:14, 1505:11, 1505:13, 1514:19</p> <p>levelized ^[2] - 1502:2, 1502:9</p> <p>levels ^[2] - 1456:24, 1470:4</p> <p>levied ^[1] - 1445:5</p> <p>lie ^[1] - 1422:9</p> <p>life ^[1] - 1515:13</p> <p>Light ^[2] - 1493:4, 1493:25</p> <p>Light's ^[1] - 1494:23</p> <p>lignite ^[1] - 1465:9</p> <p>likely ^[10] - 1426:16, 1448:19, 1461:9, 1461:10, 1477:8, 1495:10, 1520:20, 1520:21, 1526:6, 1532:11</p> <p>limit ^[1] - 1504:5</p> <p>limits ^[2] - 1468:14, 1499:7</p> <p>line ^[18] - 1429:24, 1430:1, 1431:5, 1432:3, 1437:16, 1440:21, 1443:17,</p>	<p>1444:19, 1492:17, 1496:18, 1501:21, 1511:21, 1526:1, 1526:3, 1526:6, 1527:12, 1530:1</p> <p>linear ^[1] - 1529:12</p> <p>lines ^[14] - 1428:13, 1431:4, 1440:23, 1445:10, 1446:12, 1446:17, 1448:11, 1450:16, 1477:6, 1478:20, 1492:13, 1525:25, 1528:12, 1532:7</p> <p>liquefied ^[1] - 1427:10</p> <p>liquid ^[1] - 1469:17</p> <p>Liquid ^[1] - 1469:21</p> <p>list ^[5] - 1433:7, 1433:14, 1433:15, 1448:3, 1448:11</p> <p>listed ^[1] - 1460:6</p> <p>listen ^[3] - 1458:20, 1527:15, 1527:17</p> <p>listening ^[1] - 1531:3</p> <p>literally ^[2] - 1472:24, 1473:17</p> <p>live ^[2] - 1476:24, 1477:2</p> <p>lived ^[1] - 1469:13</p> <p>LLC ^[1] - 1423:2</p> <p>LNG ^[25] - 1427:11, 1432:8, 1432:17, 1432:21, 1432:23, 1448:6, 1448:11, 1449:6, 1449:14, 1450:5, 1450:8, 1453:21, 1454:8, 1454:15, 1454:16, 1454:18, 1459:23, 1460:4, 1460:6, 1460:10, 1460:19, 1460:24, 1473:14, 1473:21</p> <p>load ^[4] - 1447:13, 1447:19, 1458:12, 1458:14</p> <p>loads ^[4] - 1444:22, 1445:3, 1445:8</p> <p>lobbying ^[1] - 1438:2</p> <p>local ^[1] - 1472:3</p> <p>Location ^[1] - 1419:14</p> <p>location ^[1] - 1463:6</p> <p>long-term ^[4] - 1429:20, 1463:3, 1473:23, 1515:18</p> <p>longer-term ^[2] - 1427:4, 1462:13</p> <p>look ^[20] - 1428:5, 1428:13, 1430:20, 1432:1, 1433:1, 1444:6, 1452:1, 1457:3, 1459:12, 1459:21, 1462:21, 1467:17, 1470:5, 1494:23, 1511:5, 1517:19, 1518:5, 1518:12, 1528:14, 1530:9</p> <p>looked ^[8] - 1427:1, 1427:4, 1447:1, 1447:8, 1447:9, 1479:6, 1503:20, 1518:21</p> <p>looking ^[7] - 1440:22, 1462:24, 1478:2, 1512:20, 1518:25, 1519:1, 1519:7</p>
K	<p style="text-align: center;">L</p> <p>LA ^[24] - 1425:5, 1436:5, 1436:7, 1439:15, 1439:20, 1443:16, 1443:21, 1448:10, 1448:14, 1448:16, 1449:1, 1452:10, 1454:11, 1454:21, 1480:5, 1482:6, 1487:3, 1497:12, 1500:3, 1516:2, 1516:4, 1518:19, 1518:20, 1520:24</p> <p>labeled ^[1] - 1440:10</p> <p>labor ^[2] - 1472:14, 1513:20</p> <p>language ^[1] - 1512:4</p> <p>large ^[10] - 1433:17, 1436:18, 1453:8, 1458:3, 1458:10, 1462:10, 1463:17, 1467:25, 1510:19, 1517:10</p> <p>large-scale ^[1] - 1510:19</p> <p>largely ^[4] - 1435:10, 1458:3, 1458:15, 1481:9</p> <p>larger ^[4] - 1439:11, 1495:20,</p>	<p>1496:1, 1504:17</p> <p>largest ^[3] - 1465:13, 1493:18, 1494:10</p> <p>last ^[17] - 1427:25, 1429:18, 1437:4, 1442:7, 1449:2, 1465:10, 1466:22, 1467:18, 1471:8, 1473:19, 1500:17, 1521:23, 1523:13, 1527:5, 1533:5, 1534:7, 1534:12</p> <p>late ^[7] - 1464:4, 1464:19, 1482:12, 1504:2, 1504:22, 1505:15, 1505:18</p> <p>late-filed ^[7] - 1464:4, 1464:19, 1482:12, 1504:2, 1504:22, 1505:15, 1505:18</p> <p>lately ^[1] - 1473:6</p> <p>latest ^[1] - 1494:9</p> <p>law ^[1] - 1422:5</p> <p>LAW ^[1] - 1417:22</p> <p>lead ^[1] - 1426:16</p> <p>leading ^[1] - 1519:9</p> <p>leads ^[1] - 1445:17</p> <p>least ^[5] - 1429:4, 1471:6, 1482:12, 1497:3, 1517:2</p> <p>least-cost ^[1] - 1497:3</p> <p>leave ^[1] - 1474:3</p> <p>leaving ^[1] - 1521:25</p> <p>led ^[2] - 1438:13, 1438:19</p> <p>left ^[1] - 1460:1</p> <p>Less ^[1] - 1452:17</p> <p>less ^[21] - 1427:21, 1435:20, 1443:5, 1444:20, 1447:15, 1452:8, 1452:12, 1452:16, 1460:16, 1469:13, 1472:7, 1496:8, 1503:6, 1504:6, 1513:11, 1513:12, 1513:13, 1513:14, 1514:5, 1520:17, 1520:21</p> <p>level ^[8] - 1430:7, 1467:12, 1503:16, 1503:17, 1504:14, 1505:11, 1505:13, 1514:19</p> <p>levelized ^[2] - 1502:2, 1502:9</p> <p>levels ^[2] - 1456:24, 1470:4</p> <p>levied ^[1] - 1445:5</p> <p>lie ^[1] - 1422:9</p> <p>life ^[1] - 1515:13</p> <p>Light ^[2] - 1493:4, 1493:25</p> <p>Light's ^[1] - 1494:23</p> <p>lignite ^[1] - 1465:9</p> <p>likely ^[10] - 1426:16, 1448:19, 1461:9, 1461:10, 1477:8, 1495:10, 1520:20, 1520:21, 1526:6, 1532:11</p> <p>limit ^[1] - 1504:5</p> <p>limits ^[2] - 1468:14, 1499:7</p> <p>line ^[18] - 1429:24, 1430:1, 1431:5, 1432:3, 1437:16, 1440:21, 1443:17,</p>	<p>1444:19, 1492:17, 1496:18, 1501:21, 1511:21, 1526:1, 1526:3, 1526:6, 1527:12, 1530:1</p> <p>linear ^[1] - 1529:12</p> <p>lines ^[14] - 1428:13, 1431:4, 1440:23, 1445:10, 1446:12, 1446:17, 1448:11, 1450:16, 1477:6, 1478:20, 1492:13, 1525:25, 1528:12, 1532:7</p> <p>liquefied ^[1] - 1427:10</p> <p>liquid ^[1] - 1469:17</p> <p>Liquid ^[1] - 1469:21</p> <p>list ^[5] - 1433:7, 1433:14, 1433:15, 1448:3, 1448:11</p> <p>listed ^[1] - 1460:6</p> <p>listen ^[3] - 1458:20, 1527:15, 1527:17</p> <p>listening ^[1] - 1531:3</p> <p>literally ^[2] - 1472:24, 1473:17</p> <p>live ^[2] - 1476:24, 1477:2</p> <p>lived ^[1] - 1469:13</p> <p>LLC ^[1] - 1423:2</p> <p>LNG ^[25] - 1427:11, 1432:8, 1432:17, 1432:21, 1432:23, 1448:6, 1448:11, 1449:6, 1449:14, 1450:5, 1450:8, 1453:21, 1454:8, 1454:15, 1454:16, 1454:18, 1459:23, 1460:4, 1460:6, 1460:10, 1460:19, 1460:24, 1473:14, 1473:21</p> <p>load ^[4] - 1447:13, 1447:19, 1458:12, 1458:14</p> <p>loads ^[4] - 1444:22, 1445:3, 1445:8</p> <p>lobbying ^[1] - 1438:2</p> <p>local ^[1] - 1472:3</p> <p>Location ^[1] - 1419:14</p> <p>location ^[1] - 1463:6</p> <p>long-term ^[4] - 1429:20, 1463:3, 1473:23, 1515:18</p> <p>longer-term ^[2] - 1427:4, 1462:13</p> <p>look ^[20] - 1428:5, 1428:13, 1430:20, 1432:1, 1433:1, 1444:6, 1452:1, 1457:3, 1459:12, 1459:21, 1462:21, 1467:17, 1470:5, 1494:23, 1511:5, 1517:19, 1518:5, 1518:12, 1528:14, 1530:9</p> <p>looked ^[8] - 1427:1, 1427:4, 1447:1, 1447:8, 1447:9, 1479:6, 1503:20, 1518:21</p> <p>looking ^[7] - 1440:22, 1462:24, 1478:2, 1512:20, 1518:25, 1519:1, 1519:7</p>
K	<p>K-l-e-i-n ^[1] - 1422:24</p> <p>Katrina ^[1] - 1462:9</p> <p>keep ^[1] - 1511:17</p> <p>Kevin ^[1] - 1466:10</p> <p>kilowatt ^[1] - 1484:18</p> <p>kilowatt-hours ^[1] - 1484:18</p> <p>kind ^[7] - 1428:16, 1428:21, 1463:4, 1483:11, 1513:2, 1529:11, 1529:13</p> <p>KLEIN ^[2] - 1418:3, 1422:12</p>	<p>1496:1, 1504:17</p> <p>largest ^[3] - 1465:13, 1493:18, 1494:10</p> <p>last ^[17] - 1427:25, 1429:18, 1437:4, 1442:7, 1449:2, 1465:10, 1466:22, 1467:18, 1471:8, 1473:19, 1500:17, 1521:23, 1523:13, 1527:5, 1533:5, 1534:7, 1534:12</p> <p>late ^[7] - 1464:4, 1464:19, 1482:12, 1504:2, 1504:22, 1505:15, 1505:18</p> <p>late-filed ^[7] - 1464:4, 1464:19, 1482:12, 1504:2, 1504:22, 1505:15, 1505:18</p> <p>lately ^[1] - 1473:6</p> <p>latest ^[1] - 1494:9</p> <p>law ^[1] - 1422:5</p> <p>LAW ^[1] - 1417:22</p> <p>lead ^[1] - 1426:16</p> <p>leading ^[1] - 1519:9</p> <p>leads ^[1] - 1445:17</p> <p>least ^[5] - 1429:4, 1471:6, 1482:12, 1497:3, 1517:2</p> <p>least-cost ^[1] - 1497:3</p> <p>leave ^[1] - 1474:3</p> <p>leaving ^[1] - 1521:25</p> <p>led ^[2] - 1438:13, 1438:19</p> <p>left ^[1] - 1460:1</p> <p>Less ^[1] - 1452:17</p> <p>less ^[21] - 1427:21, 1435:20, 1443:5, 1444:20, 1447:15, 1452:8, 1452:12, 1452:16, 1460:16, 1469:13, 1472:7, 1496:8, 1503:6, 1504:6, 1513:11, 1513:12, 1513:13, 1513:14, 1514:5, 1520:17, 1520:21</p> <p>level ^[8] - 1430:7, 1467:12, 1503:16, 1503:17, 1504:14, 1505:11, 1505:13, 1514:19</p> <p>levelized ^[2] - 1502:2, 1502:9</p> <p>levels ^[2] - 1456:24, 1470:4</p> <p>levied ^[1] - 1445:5</p> <p>lie ^[1] - 1422:9</p> <p>life ^[1] - 1515:13</p> <p>Light ^[2] - 1493:4, 1493:25</p> <p>Light's ^[1] - 1494:23</p> <p>lignite ^[1] - 1465:9</p> <p>likely ^[10] - 1426:16, 1448:19, 1461:9, 1461:10, 1477:8, 1495:10, 1520:20, 1520:21, 1526:6, 1532:11</p> <p>limit ^[1] - 1504:5</p> <p>limits ^[2] - 1468:14, 1499:7</p> <p>line ^[18] - 1429:24, 1430:1, 1431:5, 1432:3, 1437:16, 1440:21, 1443:17,</p>	<p>1444:19, 1492:17, 1496:18, 1501:21, 1511:21, 1526:1, 1526:3, 1526:6, 1527:12, 1530:1</p> <p>linear ^[1] - 1529:12</p> <p>lines ^[14] - 1428:13, 1431:4, 1440:23, 1445:10, 1446:12, 1446:17, 1448:11, 1450:16, 1477:6, 1478:20, 1492:13, 1525:25, 1528:12, 1532:7</p> <p>liquefied ^[1] - 1427:10</p> <p>liquid ^[1] - 1469:17</p> <p>Liquid ^[1] - 1469:21</p> <p>list ^[5] - 1433:7, 1433:14, 1433:15, 1448:3, 1448:11</p> <p>listed ^[1] - 1460:6</p> <p>listen ^[3] - 1458:20, 1527:15, 1527:17</p> <p>listening ^[1] - 1531:3</p> <p>literally ^[2] - 1472:24, 1473:17</p> <p>live ^[2] - 1476:24, 1477:2</p> <p>lived ^[1] - 1469:13</p> <p>LLC ^[1] - 1423:2</p> <p>LNG ^[25] - 1427:11, 1432:8, 1432:17, 1432:21, 1432:23, 1448:6, 1448:11, 1449:6, 1449:14, 1450:5, 1450:8, 1453:21, 1454:8, 1454:15, 1454:16, 1454:18, 1459:23, 1460:4, 1460:6, 1460:10, 1460:19, 1460:24, 1473:14, 1473:21</p> <p>load ^[4] - 1447:13, 1447:19, 1458:12, 1458:14</p> <p>loads ^[4] - 1444:22, 1445:3, 1445:8</p> <p>lobbying ^[1] - 1438:2</p> <p>local ^[1] - 1472:3</p> <p>Location ^[1] - 1419:14</p> <p>location ^[1] - 1463:6</p> <p>long-term ^[4] - 1429:20, 1463:3, 1473:23, 1515:18</p> <p>longer-term ^[2] - 1427:4, 1462:13</p> <p>look ^[20] - 1428:5, 1428:13, 1430:20, 1432:1, 1433:1, 1444:6, 1452:1, 1457:3, 1459:12, 1459:21, 1462:21, 1467:17, 1470:5, 1494:23, 1511:5, 1517:19, 1518:5, 1518:12, 1528:14, 1530:9</p> <p>looked ^[8] - 1427:1, 1427:4, 1447:1, 1447:8, 1447:9, 1479:6, 1503:20, 1518:21</p> <p>looking ^[7] - 1440:22, 1462:24, 1478:2, 1512:20, 1518:25, 1519:1, 1519:7</p>

<p>losing ^[1] - 1455:5 low ^[8] - 1428:17, 1430:7, 1455:24, 1457:9, 1490:19, 1507:14, 1514:17, 1519:14 lower ^[11] - 1434:25, 1441:18, 1441:24, 1442:6, 1442:9, 1443:1, 1503:15, 1503:17, 1505:11, 1515:10, 1530:2 Lower ^[1] - 1435:2 Lower-income ^[1] - 1435:2 lowest ^[3] - 1428:13, 1460:19, 1501:24 lumps ^[1] - 1529:11 luncheon ^[1] - 1521:24 luxury ^[1] - 1472:19</p>	<p>Massachusetts ^[1] - 1423:20 massive ^[2] - 1462:20, 1463:4 material ^[3] - 1422:7, 1450:24, 1520:21 materials ^[3] - 1443:19, 1443:20, 1513:20 math ^[2] - 1463:10, 1468:25 matter ^[4] - 1423:24, 1469:17, 1480:9, 1512:24 matters ^[2] - 1485:14, 1488:8 MBA ^[1] - 1423:21 McClendon ^[1] - 1449:19 MDU ^[10] - 1417:7, 1444:1, 1457:25, 1476:17, 1476:23, 1477:9, 1477:19, 1482:13, 1482:21, 1483:21 MDU's ^[1] - 1482:17 mean ^[15] - 1434:13, 1444:22, 1452:15, 1453:3, 1456:25, 1457:4, 1461:25, 1474:24, 1481:23, 1490:11, 1506:8, 1509:22, 1510:2, 1522:1, 1523:18 means ^[5] - 1430:2, 1481:19, 1488:11, 1508:19, 1532:4 meant ^[1] - 1457:13 measure ^[2] - 1490:20, 1509:8 measures ^[7] - 1445:6, 1445:7, 1447:14, 1480:7, 1480:12, 1493:10 Median ^[1] - 1419:18 meet ^[6] - 1434:17, 1471:2, 1488:11, 1495:2, 1498:17, 1505:8 megawatt ^[9] - 1502:3, 1502:6, 1502:10, 1502:11, 1502:12, 1502:19, 1503:6, 1528:18 megawatt-hour ^[6] - 1502:3, 1502:6, 1502:10, 1502:12, 1502:19, 1503:6 megawatt-hours ^[1] - 1528:18 megawatts ^[24] - 1434:2, 1451:10, 1451:11, 1451:22, 1451:25, 1500:25, 1502:8, 1503:2, 1503:5, 1503:13, 1503:21, 1505:7, 1505:13, 1528:8, 1528:13, 1528:14, 1528:22, 1528:24, 1529:1, 1529:7, 1530:18, 1532:3, 1532:6 members ^[1] - 1475:12 memory ^[2] - 1447:23, 1518:23 mentioned ^[1] - 1494:22 merely ^[2] - 1471:3, 1481:25</p>	<p>message ^[1] - 1533:24 Mexico ^[6] - 1432:13, 1432:14, 1459:6, 1459:11, 1459:18, 1459:19 Michael ^[1] - 1449:4 Middle ^[1] - 1462:12 middle ^[1] - 1473:15 Midwest ^[4] - 1427:6, 1439:9, 1526:17, 1530:6 might ^[10] - 1426:7, 1429:10, 1434:22, 1446:9, 1448:6, 1452:1, 1457:2, 1474:13, 1476:11, 1533:20 mike ^[2] - 1487:5, 1500:23 million ^[12] - 1430:4, 1431:8, 1431:23, 1434:5, 1434:9, 1449:20, 1457:9, 1457:11, 1467:4, 1526:20, 1526:22, 1528:18 millions ^[2] - 1434:12, 1439:5 mind ^[4] - 1492:24, 1501:5, 1502:24, 1503:20 mine ^[2] - 1424:6, 1439:19 minimal ^[1] - 1503:23 minimize ^[2] - 1498:16, 1508:24 Mining ^[1] - 1461:17 Minnesota ^[9] - 1439:17, 1439:25, 1446:25, 1447:7, 1448:2, 1451:2, 1479:5, 1526:3, 1526:5 Minot ^[1] - 1483:7 minute ^[1] - 1421:18 minutes ^[1] - 1521:16 MISO ^[4] - 1439:10, 1451:1, 1451:7, 1526:15 miss ^[1] - 1521:22 MIT ^[1] - 1436:22 mitigation ^[2] - 1438:17, 1517:11 mix ^[8] - 1426:24, 1432:10, 1444:14, 1445:12, 1445:17, 1450:6, 1453:5, 1455:20 MMBtu ^[1] - 1484:10 model ^[6] - 1490:14, 1491:15, 1501:24, 1504:6, 1507:16, 1507:17 modeling ^[2] - 1465:11, 1495:20 models ^[3] - 1507:24, 1508:1, 1508:4 moderate ^[1] - 1435:22 moment ^[3] - 1437:10, 1437:12, 1439:23 money ^[1] - 1462:21 monitor ^[1] - 1489:21 monitoring ^[2] - 1489:3, 1523:25</p>	<p>Montana ^[4] - 1417:7, 1421:8, 1484:1, 1497:1 Montana-Dakota ^[4] - 1417:7, 1421:8, 1484:1, 1497:1 month ^[11] - 1431:9, 1431:14, 1431:15, 1431:18, 1431:23, 1434:11, 1474:11, 1507:6 month's ^[2] - 1431:16, 1431:17 month-to-month ^[3] - 1431:9, 1431:14, 1431:15 monthly ^[3] - 1431:2, 1431:3, 1431:25 months ^[2] - 1431:21, 1462:1 Morgan ^[2] - 1519:8 Morlock ^[1] - 1490:14 morning ^[12] - 1422:19, 1422:20, 1424:2, 1425:18, 1475:9, 1475:10, 1492:8, 1492:9, 1497:13, 1497:14, 1506:21, 1506:22 Morris ^[4] - 1526:3, 1528:12, 1530:7, 1530:11 most ^[33] - 1432:13, 1434:24, 1445:2, 1445:4, 1447:14, 1453:5, 1457:7, 1461:8, 1461:10, 1476:4, 1495:10, 1495:22, 1496:2, 1498:12, 1498:16, 1500:10, 1502:20, 1502:22, 1503:14, 1503:21, 1508:5, 1508:9, 1508:12, 1508:18, 1512:18, 1512:19, 1512:20, 1520:2, 1520:9, 1520:19, 1520:20 Most ^[2] - 1460:10, 1532:11 mostly ^[1] - 1432:10 motivation ^[1] - 1515:4 motivations ^[1] - 1513:23 move ^[5] - 1471:23, 1472:8, 1472:10, 1474:7, 1500:19 moving ^[4] - 1445:10, 1450:12, 1471:17, 1471:25 MR ^[90] - 1421:14, 1422:16, 1422:18, 1424:24, 1425:2, 1425:7, 1425:10, 1436:2, 1439:13, 1443:14, 1448:8, 1448:13, 1448:24, 1451:16, 1454:10, 1454:23, 1455:2, 1455:8, 1464:5, 1464:16, 1464:18, 1464:22, 1465:3, 1465:6, 1465:18, 1465:21, 1466:2, 1478:12, 1478:14, 1480:2, 1482:8, 1482:11, 1482:23, 1483:2, 1483:9, 1483:21, 1483:23, 1484:5, 1484:7, 1484:12, 1484:13,</p>
M			
<p>ma'am ^[1] - 1504:23 Magazine ^[1] - 1437:16 main ^[1] - 1500:17 maintain ^[1] - 1526:15 major ^[3] - 1448:11, 1473:5, 1518:22 majority ^[2] - 1514:13, 1526:24 manage ^[1] - 1523:20 management ^[5] - 1444:20, 1452:25, 1494:20, 1514:14, 1523:23 Management ^[1] - 1504:3 manager ^[1] - 1523:16 manifested ^[1] - 1492:19 manner ^[4] - 1499:2, 1499:16, 1508:1, 1511:14 manufacturing ^[1] - 1472:23 map ^[4] - 1432:25, 1463:6, 1463:21, 1467:17 March ^[1] - 1501:16 margin ^[1] - 1457:9 Mark ^[1] - 1436:12 marked ^[5] - 1505:19, 1505:20, 1524:16, 1525:10, 1525:12 market ^[24] - 1427:3, 1427:17, 1432:21, 1432:23, 1450:13, 1453:25, 1456:12, 1460:2, 1460:15, 1460:17, 1460:18, 1461:15, 1461:19, 1461:22, 1472:6, 1473:23, 1474:3, 1474:6, 1474:7, 1474:8, 1481:16, 1481:18, 1508:17, 1509:20 markets ^[8] - 1427:13, 1432:5, 1454:18, 1456:7, 1460:21, 1460:22, 1470:19, 1507:7</p>			

<p>1484:15, 1484:23, 1485:6, 1485:11, 1486:2, 1486:24, 1487:1, 1487:13, 1492:2, 1492:5, 1492:7, 1497:7, 1497:10, 1505:25, 1506:3, 1506:13, 1515:23, 1515:25, 1518:17, 1521:8, 1521:10, 1521:14, 1522:13, 1523:5, 1523:10, 1524:25, 1525:3, 1525:5, 1525:7, 1525:12, 1525:16, 1525:18, 1525:21, 1529:14, 1529:17, 1529:19, 1531:19, 1531:22, 1532:18, 1532:21, 1532:23, 1533:4, 1533:6, 1533:7, 1533:11, 1533:14, 1533:24, 1534:5, 1534:12</p> <p>MS [32] - 1425:5, 1436:5, 1436:7, 1439:15, 1439:20, 1443:16, 1443:21, 1448:10, 1448:14, 1448:16, 1449:1, 1452:10, 1454:11, 1454:21, 1464:8, 1464:10, 1464:12, 1464:17, 1464:20, 1480:5, 1482:6, 1483:22, 1487:3, 1497:12, 1500:3, 1505:17, 1505:23, 1516:2, 1516:4, 1518:19, 1518:20, 1520:24</p> <p>multinational [1] - 1438:14</p> <p>must [1] - 1446:2</p> <p>muted [1] - 1527:6</p>	<p>1435:19, 1439:10, 1440:2, 1440:10, 1440:12, 1440:19, 1440:25, 1441:3, 1441:5, 1441:10, 1441:13, 1441:17, 1441:23, 1442:2, 1442:5, 1442:13, 1442:18, 1442:25, 1450:12, 1450:19, 1450:22, 1451:11, 1451:22, 1452:4, 1452:9, 1452:11, 1452:13, 1452:22, 1452:25, 1453:14, 1454:8, 1454:19, 1455:9, 1455:18, 1455:19, 1455:22, 1456:6, 1456:11, 1456:14, 1456:21, 1458:3, 1458:11, 1459:1, 1461:4, 1461:11, 1462:2, 1462:7, 1463:7, 1466:15, 1467:1, 1468:5, 1468:8, 1468:16, 1469:17, 1470:2, 1470:22, 1470:23, 1470:25, 1471:1, 1471:7, 1471:14, 1471:18, 1472:2, 1472:3, 1472:9, 1472:10, 1472:23, 1473:2, 1473:5, 1475:19, 1476:19, 1477:5, 1477:10, 1477:11, 1477:18, 1477:22, 1481:10, 1481:11, 1481:16, 1481:22, 1482:1, 1482:3, 1482:14, 1482:17, 1483:5, 1483:13, 1483:15, 1484:1, 1492:16, 1493:19, 1494:24, 1514:7, 1514:15</p> <p>Natural [6] - 1419:3, 1419:6, 1419:10, 1419:12, 1419:14, 1419:21</p> <p>near [3] - 1458:17, 1526:2</p> <p>near-term [1] - 1458:17</p> <p>necessarily [3] - 1442:1, 1461:18, 1472:1</p> <p>necessary [5] - 1480:7, 1489:23, 1510:22, 1528:23, 1528:25</p> <p>necessity [1] - 1516:15</p> <p>need [19] - 1444:25, 1446:21, 1448:20, 1449:21, 1452:2, 1452:7, 1458:9, 1470:5, 1479:9, 1486:19, 1488:12, 1489:2, 1489:11, 1501:8, 1505:4, 1518:5, 1521:22, 1530:24, 1532:7</p> <p>needing [2] - 1488:17, 1489:8</p> <p>needs [7] - 1434:17, 1435:10, 1458:18, 1495:2, 1505:9, 1521:16, 1530:9</p> <p>Net [1] - 1419:10</p> <p>net [2] - 1459:14, 1481:19</p> <p>never [1] - 1426:14</p> <p>New [1] - 1419:22</p>	<p>new [10] - 1437:22, 1446:21, 1474:13, 1480:10, 1501:17, 1506:9, 1510:4, 1519:19, 1519:24</p> <p>next [8] - 1429:20, 1430:20, 1448:18, 1449:6, 1450:9, 1464:21, 1474:11, 1532:9</p> <p>nice [1] - 1513:2</p> <p>nicely [1] - 1429:8</p> <p>Nigeria [1] - 1433:8</p> <p>nine [2] - 1433:6, 1433:9</p> <p>none [3] - 1424:23, 1441:5, 1454:2</p> <p>nonelectric [3] - 1440:3, 1440:9, 1440:19</p> <p>Nonelectric [1] - 1440:24</p> <p>nonextension [1] - 1490:24</p> <p>nongovernmental [1] - 1423:12</p> <p>nonlawyer [1] - 1486:12</p> <p>noon [1] - 1521:24</p> <p>NORTH [1] - 1417:2</p> <p>North [46] - 1417:18, 1419:18, 1422:9, 1434:18, 1434:25, 1435:6, 1439:8, 1440:1, 1440:8, 1440:10, 1440:18, 1440:25, 1441:5, 1441:9, 1441:19, 1441:24, 1442:11, 1442:16, 1443:3, 1447:25, 1453:13, 1453:17, 1453:20, 1454:5, 1454:15, 1463:8, 1463:16, 1464:25, 1465:7, 1465:8, 1465:12, 1465:15, 1467:1, 1467:24, 1468:24, 1473:1, 1477:1, 1483:4, 1506:23, 1514:10, 1516:13, 1522:16, 1524:8, 1533:22, 1535:14, 1536:7</p> <p>Nos [1] - 1421:11</p> <p>note [5] - 1427:18, 1456:20, 1490:16, 1503:9, 1509:4</p> <p>noted [1] - 1428:5</p> <p>notes [3] - 1519:7, 1535:12, 1536:6</p> <p>nothing [1] - 1515:20</p> <p>nowhere [1] - 1467:19</p> <p>nuance [1] - 1446:24</p> <p>nuclear [6] - 1458:10, 1458:16, 1458:17, 1493:21, 1493:22, 1494:24</p> <p>number [22] - 1426:1, 1427:23, 1430:24, 1432:4, 1433:25, 1457:3, 1459:13, 1460:6, 1468:11, 1472:20, 1474:17, 1475:16, 1483:12, 1490:17, 1490:19, 1492:10, 1492:20, 1493:1, 1493:9, 1513:12, 1517:22, 1529:7</p>	<p>numbered [2] - 1464:13, 1518:15</p> <p>numbers [3] - 1446:15, 1474:21, 1490:15</p> <p>numerous [1] - 1488:17</p>
O			
			<p>oath [4] - 1422:4, 1422:6, 1485:18, 1523:1</p> <p>Objection [2] - 1439:13, 1454:10</p> <p>objection [9] - 1425:5, 1425:7, 1487:1, 1487:3, 1491:6, 1525:3, 1525:5, 1525:16, 1525:18</p> <p>obligation [7] - 1489:21, 1498:10, 1498:14, 1499:1, 1499:19, 1508:10, 1511:24</p> <p>obtain [1] - 1511:7</p> <p>obtuse [1] - 1457:2</p> <p>obvious [2] - 1495:18, 1512:21</p> <p>obviously [2] - 1507:20, 1514:25</p> <p>Obviously [2] - 1508:7, 1516:13</p> <p>occasion [3] - 1423:23, 1524:10, 1527:15</p> <p>occurred [2] - 1473:17, 1500:11</p> <p>Ocean [1] - 1459:24</p> <p>OF [4] - 1417:2, 1417:12, 1535:1, 1536:1</p> <p>Off'd [3] - 1418:18, 1419:2, 1420:3</p> <p>off-system [4] - 1496:20, 1496:22, 1497:2, 1515:12</p> <p>offer [8] - 1424:24, 1458:17, 1481:21, 1481:24, 1482:2, 1486:24, 1524:25, 1525:13</p> <p>offered [1] - 1451:13</p> <p>offers [1] - 1454:16</p> <p>offset [2] - 1446:21, 1447:21</p> <p>offshore [1] - 1468:12</p> <p>often [2] - 1461:16, 1469:4</p> <p>oil [20] - 1427:22, 1430:17, 1430:19, 1433:15, 1433:17, 1433:20, 1447:3, 1457:3, 1457:11, 1460:17, 1462:4, 1462:11, 1462:22, 1463:2, 1463:6, 1463:22, 1467:17, 1467:23, 1468:1, 1469:4</p> <p>Oil [3] - 1419:14, 1427:14, 1467:7</p> <p>old [1] - 1455:15</p> <p>once [4] - 1435:18, 1450:13, 1459:23, 1515:14</p>
N			
<p>name [12] - 1422:21, 1422:23, 1423:9, 1437:9, 1437:21, 1437:22, 1455:3, 1475:11, 1486:3, 1486:4, 1523:11, 1523:13</p> <p>nameplate [2] - 1528:22, 1529:7</p> <p>national [9] - 1427:12, 1434:22, 1435:1, 1440:14, 1450:13, 1453:3, 1453:5, 1465:12, 1468:11</p> <p>nationally [1] - 1445:5</p> <p>nations [1] - 1433:20</p> <p>natural [118] - 1426:17, 1426:20, 1427:3, 1427:8, 1427:10, 1427:11, 1427:22, 1427:24, 1428:11, 1429:23, 1430:8, 1431:1, 1431:11, 1431:19, 1431:21, 1432:6, 1432:7, 1433:2, 1433:17, 1433:23, 1434:3, 1434:8, 1435:8, 1435:13, 1435:16,</p>			

<p>one [33] - 1426:13, 1430:24, 1431:16, 1434:5, 1437:9, 1437:14, 1439:18, 1439:22, 1444:16, 1446:25, 1449:4, 1449:8, 1450:14, 1451:4, 1453:17, 1465:13, 1467:7, 1471:20, 1474:23, 1475:11, 1482:20, 1498:22, 1511:10, 1511:11, 1512:5, 1512:12, 1513:11, 1513:15, 1526:1, 1530:1, 1531:19, 1534:11</p> <p>One [1] - 1488:3</p> <p>ones [2] - 1431:11, 1460:20</p> <p>ongoing [1] - 1489:21</p> <p>OPEC [1] - 1462:23</p> <p>open [3] - 1510:17, 1520:1, 1520:8</p> <p>operate [1] - 1498:18</p> <p>operated [4] - 1434:4, 1526:6, 1526:8, 1530:2</p> <p>operating [2] - 1488:5, 1515:16</p> <p>operation [2] - 1527:3, 1527:11</p> <p>Operator [1] - 1439:10</p> <p>opinion [6] - 1445:23, 1455:9, 1457:22, 1457:24, 1461:8, 1497:6</p> <p>opportunities [3] - 1447:17, 1479:22, 1508:24</p> <p>opportunity [4] - 1425:24, 1435:25, 1515:12, 1517:3</p> <p>opposed [3] - 1447:23, 1511:20, 1512:19</p> <p>option [3] - 1481:12, 1481:13, 1481:14</p> <p>order [5] - 1511:15, 1512:5, 1522:9, 1528:18, 1530:8</p> <p>Ordinarily [1] - 1425:16</p> <p>organizations [1] - 1423:12</p> <p>originally [1] - 1518:14</p> <p>otherwise [1] - 1520:17</p> <p>OTP [2] - 1464:24, 1465:25</p> <p>OTP/MDU [19] - 1418:17, 1421:20, 1424:5, 1424:6, 1424:25, 1425:8, 1440:6, 1448:15, 1464:20, 1464:21, 1464:23, 1464:25, 1465:25, 1484:5, 1524:16, 1525:1, 1525:6, 1525:13, 1525:19</p> <p>Otter [24] - 1417:5, 1421:8, 1457:25, 1476:17, 1476:23, 1477:9, 1477:19, 1482:18, 1482:25, 1483:23, 1495:5, 1495:10, 1503:10, 1503:14, 1503:22, 1505:6, 1505:10,</p>	<p>1506:5, 1507:15, 1508:3, 1523:17, 1524:1, 1524:2, 1524:4</p> <p>ourselves [1] - 1475:3</p> <p>outflows [1] - 1462:20</p> <p>Outlook [1] - 1419:8</p> <p>Outlook [4] - 1428:4, 1428:5, 1429:19, 1432:15</p> <p>outlooks [3] - 1428:8, 1466:19, 1466:20</p> <p>output [1] - 1502:20</p> <p>outside [1] - 1435:9</p> <p>overall [7] - 1431:12, 1432:9, 1433:3, 1435:14, 1447:21, 1456:12, 1519:24</p> <p>overlaps [1] - 1482:18</p> <p>overlay [1] - 1466:17</p> <p>overlooked [1] - 1485:1</p> <p>Overruled [1] - 1454:12</p> <p>overseas [4] - 1432:8, 1432:18, 1471:24, 1471:25</p> <p>oversee [1] - 1523:23</p> <p>own [9] - 1439:14, 1447:1, 1447:23, 1448:7, 1448:16, 1449:16, 1473:12, 1481:14, 1482:21</p> <p>owned [1] - 1501:24</p> <p>owner [1] - 1494:10</p> <p>owners [2] - 1463:2, 1467:22</p> <p>ownership [2] - 1421:10, 1501:24</p>	<p>1471:12, 1472:24, 1480:12, 1490:20, 1518:17, 1519:19, 1519:21, 1519:23, 1527:16</p> <p>partially [1] - 1492:21</p> <p>participants [3] - 1443:12, 1522:7</p> <p>participate [4] - 1503:15, 1503:16, 1505:11, 1505:13</p> <p>participation [4] - 1421:9, 1439:9, 1503:23, 1504:6</p> <p>particular [10] - 1427:3, 1431:20, 1442:8, 1448:25, 1451:6, 1467:7, 1478:1, 1492:24, 1496:15, 1527:19</p> <p>particularly [6] - 1435:5, 1474:22, 1495:23, 1509:2, 1514:8, 1516:16</p> <p>parties [2] - 1425:15, 1508:7</p> <p>partners [4] - 1433:11, 1503:1, 1506:4, 1506:9</p> <p>parts [3] - 1435:12, 1449:15, 1527:17</p> <p>party [1] - 1451:13</p> <p>pass [2] - 1432:21, 1516:7</p> <p>passed [2] - 1455:18, 1514:13</p> <p>passes [1] - 1462:11</p> <p>past [1] - 1438:7</p> <p>pay [2] - 1462:21, 1502:14</p> <p>paying [1] - 1434:16</p> <p>peak [3] - 1444:21, 1445:3, 1445:8</p> <p>peaked [1] - 1459:14</p> <p>peer [4] - 1437:5, 1437:8, 1437:11, 1437:17</p> <p>peer-reviewed [1] - 1437:5</p> <p>penalties [2] - 1485:18, 1523:2</p> <p>penny [1] - 1434:5</p> <p>people [5] - 1474:17, 1476:24, 1477:3, 1480:18, 1503:3</p> <p>Per [1] - 1419:16</p> <p>per [16] - 1434:5, 1434:8, 1440:11, 1449:20, 1475:13, 1490:5, 1490:7, 1490:10, 1502:2, 1502:6, 1502:10, 1502:12, 1502:19, 1503:6, 1528:18</p> <p>Per-Household [1] - 1419:16</p> <p>perceived [1] - 1456:3</p> <p>percent [31] - 1432:12, 1432:21, 1433:5, 1433:12, 1442:9, 1444:2, 1446:5, 1447:12, 1447:14, 1447:19, 1448:18, 1449:6, 1450:8, 1452:13, 1453:4, 1453:5, 1453:7, 1453:13, 1458:12, 1458:14,</p>	<p>1463:11, 1491:4, 1491:5, 1495:11, 1495:18, 1496:9, 1507:10, 1507:16, 1508:4, 1528:21</p> <p>percentage [3] - 1435:3, 1439:12, 1477:21</p> <p>perfectly [2] - 1477:13, 1529:11</p> <p>perhaps [8] - 1458:14, 1470:9, 1477:21, 1500:21, 1513:15, 1513:16, 1513:20, 1514:17</p> <p>period [4] - 1422:11, 1449:23, 1456:10, 1502:4</p> <p>periods [1] - 1462:3</p> <p>perjury [6] - 1422:5, 1422:9, 1485:16, 1485:19, 1522:24, 1523:2</p> <p>Perjury [1] - 1422:6</p> <p>personal [4] - 1480:9, 1480:19, 1485:15, 1522:22</p> <p>perspective [1] - 1435:15</p> <p>petrochemical [1] - 1473:4</p> <p>petroleum [19] - 1427:14, 1435:9, 1441:1, 1441:3, 1441:6, 1441:10, 1441:12, 1442:3, 1454:2, 1456:15, 1456:21, 1470:12, 1470:14, 1470:16, 1470:18, 1470:21, 1475:22, 1476:1</p> <p>phone [1] - 1428:22</p> <p>phrase [1] - 1451:23</p> <p>phrasing [2] - 1457:1, 1457:18</p> <p>pipeline [3] - 1432:12, 1432:20, 1459:21</p> <p>place [6] - 1441:8, 1472:8, 1492:17, 1501:6, 1535:7, 1536:4</p> <p>places [1] - 1441:11</p> <p>plan [4] - 1482:4, 1496:23, 1505:6, 1531:25</p> <p>planet's [1] - 1433:6</p> <p>planned [3] - 1493:22, 1515:6, 1528:7</p> <p>planning [11] - 1494:19, 1495:11, 1495:25, 1496:11, 1496:12, 1496:14, 1502:3, 1508:16, 1516:20, 1523:16, 1523:20</p> <p>plans [1] - 1450:25</p> <p>plant [24] - 1443:20, 1454:8, 1454:14, 1456:17, 1470:14, 1490:3, 1490:6, 1490:9, 1490:11, 1497:18, 1497:23, 1498:18, 1499:4, 1500:20, 1502:22, 1503:2, 1515:11, 1515:13, 1515:14, 1526:12,</p>
P			
	<p>p.m [1] - 1534:15</p> <p>page [29] - 1425:19, 1425:20, 1437:14, 1440:22, 1440:23, 1441:4, 1443:11, 1443:16, 1444:18, 1445:10, 1446:12, 1448:3, 1448:8, 1448:10, 1448:15, 1449:2, 1449:3, 1450:16, 1478:17, 1492:12, 1495:4, 1495:5, 1496:17, 1501:7, 1501:19, 1507:1, 1525:23, 1526:18</p> <p>Page [1] - 1446:17</p> <p>Pages [2] - 1535:10, 1536:5</p> <p>pages [4] - 1451:8, 1488:23, 1535:10, 1536:5</p> <p>paragraph [3] - 1444:18, 1444:23, 1449:2</p> <p>parks [1] - 1468:11</p> <p>part [23] - 1432:9, 1435:22, 1436:18, 1439:18, 1439:24, 1445:19, 1449:18, 1449:22, 1456:4, 1456:11, 1457:4, 1458:4, 1462:10, 1469:20,</p>		

<p>1531:25, 1532:6, 1532:14, 1532:15</p> <p>Plant [1] - 1421:11</p> <p>plants [8] - 1438:24, 1456:8, 1480:11, 1481:2, 1509:4, 1509:7, 1509:24, 1517:6</p> <p>play [3] - 1432:8, 1468:1, 1471:19</p> <p>playing [1] - 1474:8</p> <p>plus [1] - 1430:19</p> <p>point [19] - 1429:5, 1439:7, 1440:21, 1441:11, 1445:24, 1446:3, 1448:24, 1451:13, 1454:13, 1455:25, 1476:4, 1476:7, 1491:11, 1494:12, 1499:11, 1499:20, 1509:5, 1515:15, 1520:18</p> <p>policies [1] - 1468:6</p> <p>Policy [1] - 1438:21</p> <p>political [3] - 1462:15, 1462:17, 1474:21</p> <p>pool [1] - 1426:19</p> <p>pools [1] - 1446:10</p> <p>population [5] - 1434:18, 1444:7, 1444:10, 1444:11, 1447:18</p> <p>populations [1] - 1477:1</p> <p>portfolio [1] - 1453:1</p> <p>portion [1] - 1438:13</p> <p>ports [1] - 1454:16</p> <p>posed [2] - 1424:17, 1524:20</p> <p>poses [2] - 1461:11, 1463:3</p> <p>position [5] - 1486:10, 1511:7, 1513:1, 1523:15, 1526:16</p> <p>possible [6] - 1453:8, 1482:17, 1484:10, 1498:16, 1508:9, 1526:8</p> <p>potential [12] - 1426:5, 1434:21, 1438:16, 1443:7, 1458:17, 1489:3, 1496:19, 1506:9, 1509:18, 1519:23, 1520:12, 1520:16</p> <p>potentially [5] - 1426:13, 1426:21, 1503:24, 1517:6, 1518:1</p> <p>Power [6] - 1476:17, 1493:4, 1493:25, 1494:22, 1523:17, 1524:1</p> <p>power [27] - 1423:11, 1426:19, 1426:24, 1426:25, 1434:14, 1434:16, 1435:21, 1436:21, 1437:1, 1438:4, 1445:12, 1445:13, 1445:18, 1445:20, 1446:9, 1446:19, 1446:21, 1450:19, 1450:22, 1451:25, 1455:11, 1456:1,</p>	<p>1456:13, 1456:17, 1462:15, 1471:13, 1519:10</p> <p>Power's [1] - 1497:17</p> <p>powered [1] - 1454:8</p> <p>PowerPoint [2] - 1425:12, 1425:20</p> <p>practicality [1] - 1458:2</p> <p>preciousness [1] - 1473:10</p> <p>predicts [2] - 1449:5, 1450:8</p> <p>predisposition [1] - 1498:21</p> <p>preferred [5] - 1491:22, 1503:24, 1504:7, 1504:15, 1507:18</p> <p>prefiled [6] - 1424:18, 1487:18, 1488:23, 1510:13, 1512:16, 1524:11</p> <p>Prefiled [10] - 1418:19, 1418:21, 1419:3, 1419:6, 1419:9, 1419:11, 1419:13, 1419:15, 1419:17, 1419:21</p> <p>premise [3] - 1505:2, 1505:4, 1505:9</p> <p>prepare [4] - 1425:11, 1428:4, 1486:14, 1524:10</p> <p>prepared [2] - 1435:24, 1500:10</p> <p>preparing [1] - 1428:8</p> <p>preprudence [1] - 1498:23</p> <p>preprudency [1] - 1531:11</p> <p>present [4] - 1425:25, 1462:16, 1482:2, 1517:3</p> <p>presentation [4] - 1425:13, 1425:20, 1457:3, 1459:12</p> <p>presented [1] - 1522:2</p> <p>president [2] - 1423:4, 1423:16</p> <p>press [3] - 1497:20, 1497:25, 1518:7</p> <p>pressure [4] - 1492:18, 1509:25, 1510:2, 1513:14</p> <p>pressures [3] - 1462:18, 1509:19, 1510:3</p> <p>presume [1] - 1425:3</p> <p>previous [6] - 1431:17, 1431:23, 1485:14, 1522:21, 1529:25, 1531:4</p> <p>previously [5] - 1422:3, 1475:17, 1485:23, 1486:14, 1523:7</p> <p>price [32] - 1427:2, 1427:5, 1427:9, 1427:24, 1429:23, 1430:3, 1430:17, 1430:20, 1431:16, 1431:17, 1433:24, 1435:17, 1435:22, 1439:11, 1441:17, 1441:23, 1442:12, 1442:17, 1442:24, 1443:5, 1446:11, 1446:16, 1451:12, 1454:4, 1454:19, 1456:6, 1456:15,</p>	<p>1466:18, 1471:9, 1473:21, 1492:16, 1502:13</p> <p>Price [3] - 1419:3, 1419:7, 1419:21</p> <p>priced [1] - 1428:17</p> <p>prices [47] - 1426:20, 1426:22, 1427:2, 1427:4, 1427:8, 1427:14, 1427:16, 1427:19, 1427:20, 1427:22, 1428:11, 1430:12, 1430:13, 1430:22, 1431:1, 1431:3, 1431:5, 1431:6, 1431:11, 1431:14, 1431:19, 1431:22, 1431:25, 1433:23, 1434:5, 1434:8, 1434:13, 1434:20, 1442:2, 1442:3, 1449:20, 1449:24, 1454:1, 1455:24, 1456:21, 1457:10, 1460:21, 1460:25, 1461:3, 1461:20, 1462:24, 1471:18, 1472:2, 1474:13, 1492:18, 1520:8</p> <p>Prices [1] - 1474:19</p> <p>pricing [1] - 1446:13</p> <p>primarily [4] - 1476:23, 1476:25, 1494:14, 1494:23</p> <p>primary [5] - 1426:18, 1438:5, 1495:3, 1523:19, 1526:13</p> <p>principle [1] - 1479:12</p> <p>Principles [3] - 1518:22, 1519:5, 1519:18</p> <p>principles [9] - 1517:21, 1518:4, 1518:9, 1518:10, 1518:24, 1519:6, 1519:10, 1519:12, 1519:21</p> <p>problem [2] - 1456:5, 1506:11</p> <p>problems [5] - 1456:2, 1458:23, 1462:20, 1482:1, 1493:17</p> <p>proceed [8] - 1421:25, 1465:5, 1466:1, 1498:15, 1499:2, 1499:15, 1514:21</p> <p>proceeding [10] - 1486:14, 1496:3, 1496:5, 1496:20, 1498:24, 1499:5, 1500:9, 1520:1, 1520:8, 1526:11</p> <p>proceedings [3] - 1421:1, 1535:6, 1536:3</p> <p>process [20] - 1469:16, 1469:21, 1472:23, 1473:3, 1498:21, 1508:11, 1510:17, 1511:4, 1511:6, 1511:9, 1511:18, 1514:10, 1514:11, 1516:20, 1516:24, 1517:8, 1517:9, 1517:13, 1517:14, 1517:24</p> <p>processes [2] - 1469:25,</p>	<p>1472:22</p> <p>produce [2] - 1453:18, 1528:17</p> <p>produced [1] - 1465:20</p> <p>produces [1] - 1453:13</p> <p>producing [1] - 1487:25</p> <p>product [1] - 1472:24</p> <p>production [15] - 1432:11, 1432:19, 1448:17, 1450:4, 1461:20, 1462:7, 1462:8, 1468:14, 1470:15, 1474:5, 1488:19, 1490:25, 1491:1, 1494:11</p> <p>products [1] - 1472:22</p> <p>Professional [4] - 1535:4, 1535:18, 1536:2, 1536:9</p> <p>proffer [1] - 1491:17</p> <p>profitable [1] - 1494:21</p> <p>program [1] - 1480:14</p> <p>programs [3] - 1438:10, 1447:10, 1453:6</p> <p>progresses [1] - 1469:7</p> <p>progressively [1] - 1430:13</p> <p>project [45] - 1438:19, 1488:21, 1493:6, 1495:24, 1496:15, 1499:14, 1502:1, 1502:5, 1502:11, 1505:12, 1508:19, 1508:22, 1509:12, 1509:15, 1509:21, 1510:11, 1510:19, 1510:21, 1511:8, 1512:19, 1513:8, 1513:10, 1514:16, 1514:22, 1514:23, 1515:3, 1516:6, 1517:16, 1520:18, 1520:20, 1520:22, 1523:23, 1525:24, 1526:1, 1526:10, 1526:14, 1526:15, 1526:19, 1526:25, 1527:9, 1527:24, 1528:11, 1531:10, 1531:12</p> <p>projected [7] - 1429:22, 1432:17, 1432:19, 1459:8, 1497:5, 1515:8, 1532:2</p> <p>projecting [1] - 1428:10</p> <p>projections [5] - 1428:2, 1429:15, 1429:20, 1459:16, 1515:6</p> <p>projects [15] - 1429:19, 1460:13, 1493:12, 1493:15, 1494:6, 1494:14, 1511:6, 1514:5, 1514:8, 1516:16, 1516:21, 1517:25, 1519:11, 1526:8</p> <p>propane [2] - 1475:23, 1477:7</p> <p>proper [1] - 1426:3</p> <p>proposal [4] - 1451:24, 1482:2, 1497:18, 1516:6</p> <p>proposed [5] - 1451:10,</p>
--	--	---	--

<p>1456:8, 1525:25, 1526:10, 1528:5</p> <p>protected [5] - 1442:12, 1442:17, 1442:20, 1442:21, 1468:12</p> <p>protection [1] - 1443:2</p> <p>protective [1] - 1443:9</p> <p>provable [1] - 1467:3</p> <p>proven [12] - 1432:25, 1433:4, 1433:6, 1458:19, 1463:9, 1463:18, 1466:24, 1467:17, 1468:5, 1468:23, 1469:6, 1470:6</p> <p>Proven [1] - 1467:12</p> <p>provide [12] - 1446:23, 1463:5, 1463:21, 1463:24, 1465:14, 1482:21, 1495:7, 1504:3, 1504:4, 1509:6, 1515:3, 1528:2</p> <p>provided [3] - 1452:8, 1506:8, 1518:10</p> <p>provides [1] - 1443:2</p> <p>prudence [3] - 1421:7, 1487:17, 1487:25</p> <p>Prudence [2] - 1417:6, 1417:9</p> <p>prudency [3] - 1511:16, 1531:10, 1531:13</p> <p>prudent [12] - 1498:16, 1498:18, 1499:2, 1499:6, 1499:16, 1500:19, 1512:18, 1512:19, 1512:20, 1516:18, 1520:2, 1520:9</p> <p>PSC [10] - 1420:2, 1464:8, 1464:10, 1486:16, 1486:24, 1486:25, 1487:4, 1505:15, 1505:21</p> <p>PTC [1] - 1491:13</p> <p>PTCs [2] - 1491:8, 1491:10</p> <p>PU-06-481 [2] - 1417:5, 1421:12</p> <p>PU-06-482 [2] - 1417:8, 1421:12</p> <p>public [1] - 1468:6</p> <p>Public [4] - 1421:11, 1421:23, 1455:4, 1522:16</p> <p>PUBLIC [1] - 1417:3</p> <p>publications [1] - 1437:6</p> <p>published [1] - 1437:16</p> <p>pull [1] - 1487:5</p> <p>pulverized [3] - 1481:22, 1488:16, 1497:17</p> <p>pump [1] - 1454:5</p> <p>pumps [1] - 1443:9</p> <p>punishable [1] - 1422:10</p> <p>purchased [2] - 1426:19, 1462:22</p> <p>pure [1] - 1452:22</p> <p>purpose [2] - 1442:4, 1506:7</p>	<p>purposes [12] - 1452:3, 1455:13, 1495:11, 1495:20, 1496:1, 1496:11, 1496:12, 1496:14, 1497:2, 1508:16, 1528:9, 1531:24</p> <p>put [6] - 1482:15, 1496:5, 1498:11, 1504:10, 1513:14, 1531:1</p>	<p>rates [8] - 1426:25, 1434:14, 1445:13, 1445:18, 1445:20, 1452:5, 1499:17, 1508:21</p> <p>rather [3] - 1445:25, 1485:1, 1505:14</p> <p>ratio [1] - 1508:20</p> <p>reaches [1] - 1515:15</p> <p>reacting [1] - 1427:16</p> <p>read [7] - 1441:12, 1450:24, 1487:18, 1492:22, 1496:23, 1497:20, 1522:4</p> <p>reader [1] - 1466:19</p> <p>reading [1] - 1512:16</p> <p>ready [4] - 1421:24, 1521:15, 1522:17, 1522:18</p> <p>Real [1] - 1430:9</p> <p>realistic [1] - 1454:9</p> <p>reality [1] - 1517:19</p> <p>Realizing [1] - 1491:9</p> <p>realizing [1] - 1514:15</p> <p>really [2] - 1426:14, 1454:16</p> <p>reason [4] - 1442:3, 1450:10, 1470:2, 1487:9</p> <p>reasonable [7] - 1450:9, 1491:6, 1498:6, 1501:2, 1502:13, 1507:12, 1509:16</p> <p>reasoning [1] - 1477:13</p> <p>Rebuttal [1] - 1418:21</p> <p>rebuttal [5] - 1421:19, 1424:18, 1456:19, 1490:12, 1501:14</p> <p>Rec'd [3] - 1418:18, 1419:2, 1420:3</p> <p>receive [1] - 1513:11</p> <p>received [4] - 1425:9, 1487:4, 1525:6, 1525:20</p> <p>recent [5] - 1431:7, 1456:22, 1462:17, 1487:24, 1497:15</p> <p>recently [3] - 1432:14, 1437:21, 1449:25</p> <p>recess [2] - 1484:21, 1521:19</p> <p>Recess [2] - 1485:4, 1522:10</p> <p>recognition [1] - 1519:22</p> <p>recognize [1] - 1507:15</p> <p>recognizing [1] - 1510:16</p> <p>recollection [4] - 1459:5, 1460:5, 1461:6, 1498:2</p> <p>recommendation [1] - 1519:17</p> <p>recommendations [1] - 1511:12</p> <p>record [25] - 1421:4, 1422:22, 1428:24, 1439:8, 1447:24, 1448:1, 1450:21, 1464:25, 1478:22, 1479:19, 1486:3, 1491:16, 1491:19, 1518:16, 1521:15, 1522:1, 1522:8,</p>	<p>1522:11, 1523:12, 1534:1, 1534:3, 1534:5, 1534:13, 1535:7, 1536:4</p> <p>recorded [2] - 1535:5, 1536:3</p> <p>recoverability [1] - 1468:7</p> <p>recoverable [5] - 1467:3, 1468:2, 1468:3, 1497:23, 1498:7</p> <p>recovered [1] - 1467:14</p> <p>recovery [6] - 1467:21, 1498:19, 1499:7, 1499:11, 1513:16, 1514:18</p> <p>Recross [2] - 1418:7, 1418:12</p> <p>RECROSS [2] - 1480:4, 1516:3</p> <p>Recross-examination [2] - 1418:7, 1418:12</p> <p>RECROSS-EXAMINATION [2] - 1480:4, 1516:3</p> <p>red [1] - 1431:12</p> <p>Redirect [2] - 1418:6, 1418:15</p> <p>REDIRECT [2] - 1478:13, 1531:21</p> <p>redirect [1] - 1491:18</p> <p>reduce [3] - 1438:10, 1499:25, 1532:5</p> <p>reduced [2] - 1435:15, 1445:3</p> <p>reducing [1] - 1444:21</p> <p>reduction [3] - 1438:22, 1501:1, 1526:12</p> <p>reemphasis [1] - 1493:10</p> <p>refer [6] - 1441:16, 1441:22, 1443:11, 1444:11, 1451:9, 1515:12</p> <p>reference [7] - 1429:11, 1444:23, 1457:12, 1461:16, 1473:19, 1498:24, 1517:21</p> <p>referenced [2] - 1451:3, 1518:3</p> <p>references [1] - 1473:10</p> <p>referencing [2] - 1441:2, 1495:10</p> <p>referred [1] - 1446:15</p> <p>referring [7] - 1441:14, 1446:18, 1448:10, 1448:14, 1449:1, 1449:24</p> <p>reflect [2] - 1445:21, 1499:17</p> <p>reflected [1] - 1430:7</p> <p>refreshed [1] - 1518:23</p> <p>regard [7] - 1459:6, 1467:25, 1489:20, 1498:3, 1509:14, 1512:24, 1526:16</p> <p>regarding [4] - 1422:5, 1459:1, 1485:16, 1522:23</p> <p>region [4] - 1435:11,</p>
Q			
<p>Qatar [2] - 1433:7, 1453:22</p> <p>quantify [1] - 1517:18</p> <p>quantities [1] - 1474:19</p> <p>quarter [1] - 1521:20</p> <p>questionable [1] - 1491:9</p> <p>questions [35] - 1424:17, 1436:1, 1436:13, 1455:7, 1457:19, 1459:1, 1466:2, 1466:5, 1466:12, 1475:16, 1475:20, 1478:10, 1478:16, 1480:2, 1482:9, 1486:21, 1489:19, 1490:17, 1492:11, 1497:8, 1503:8, 1505:17, 1506:14, 1512:8, 1515:21, 1521:2, 1524:19, 1527:19, 1529:15, 1529:17, 1529:19, 1531:15, 1532:18, 1532:21, 1532:23</p> <p>Questions [3] - 1466:3, 1500:4, 1529:21</p> <p>queue [1] - 1526:15</p> <p>quite [6] - 1454:3, 1466:11, 1474:16, 1485:3, 1532:15</p>			
R			
<p>R-o-g-e-l-s-t-a-d [1] - 1523:14</p> <p>Radey [1] - 1486:6</p> <p>railroads [1] - 1438:4</p> <p>raised [1] - 1448:5</p> <p>ran [1] - 1491:14</p> <p>ranges [1] - 1467:14</p> <p>ranked [1] - 1433:3</p> <p>rankings [1] - 1433:4</p> <p>rapid [1] - 1427:10</p> <p>rapidly [4] - 1432:18, 1432:21, 1460:22, 1474:6</p> <p>Raquel [1] - 1439:18</p> <p>rate [12] - 1451:12, 1496:3, 1496:4, 1496:5, 1497:23, 1498:7, 1499:5, 1499:7, 1499:11, 1499:25, 1511:21, 1520:23</p> <p>rate-recoverable [2] - 1497:23, 1498:7</p> <p>ratepayers [1] - 1499:25</p>			

<p>1450:21, 1523:22, 1530:25 region's [1] - 1450:18 regional [3] - 1427:12, 1439:4, 1450:13 regions [3] - 1426:23, 1445:11, 1446:4 Registered [4] - 1535:3, 1535:18, 1536:2, 1536:9 regular [1] - 1466:19 regulation [4] - 1492:16, 1509:18, 1518:2, 1520:12 regulations [4] - 1426:6, 1489:3, 1509:3, 1509:10 regulator [4] - 1513:5, 1513:9, 1514:4, 1514:24 regulators [3] - 1512:25, 1516:19 regulatory [9] - 1487:24, 1510:18, 1510:24, 1516:8, 1516:10, 1517:4, 1517:13, 1519:19 reiterating [2] - 1488:25, 1511:1 relate [3] - 1466:13, 1475:20, 1481:10 related [6] - 1435:4, 1435:10, 1461:15, 1475:18, 1526:18, 1526:24 relates [2] - 1467:12, 1468:6 relationship [1] - 1529:12 relative [4] - 1427:9, 1452:22, 1456:23, 1457:5 relatively [1] - 1431:9 relevant [3] - 1444:24, 1476:4, 1476:7 reliance [1] - 1426:17 relied [1] - 1478:22 reluctant [2] - 1433:10, 1479:13 remain [2] - 1427:15, 1452:8 remarks [1] - 1425:13 remember [1] - 1511:11 reminded [1] - 1518:6 renewable [3] - 1493:12, 1494:16, 1519:13 renewables [1] - 1493:13 renewed [1] - 1491:10 repeat [3] - 1441:21, 1520:4, 1527:5 repeatedly [1] - 1451:9 replace [1] - 1452:7 replaced [2] - 1451:10, 1492:21 report [1] - 1489:23 reported [3] - 1453:6, 1479:7, 1501:22 REPORTER [2] - 1535:1, 1536:1 Reporter [4] - 1535:4, 1535:18, 1536:2, 1536:9</p>	<p>repowering [1] - 1493:21 represent [1] - 1428:14 represented [1] - 1451:25 represents [3] - 1429:24, 1431:5, 1463:11 request [3] - 1509:14, 1518:8, 1519:1 requests [3] - 1487:21, 1487:22, 1489:17 require [1] - 1529:8 required [4] - 1422:4, 1422:5, 1529:10, 1530:6 requirement [1] - 1511:16 rerouted [1] - 1459:22 reserve [1] - 1467:22 Reserves [1] - 1419:14 reserves [26] - 1433:1, 1433:2, 1433:4, 1433:6, 1433:12, 1433:18, 1448:5, 1463:7, 1463:9, 1463:18, 1463:22, 1463:23, 1465:1, 1465:2, 1465:7, 1465:9, 1465:15, 1465:22, 1465:23, 1466:24, 1467:1, 1467:18, 1468:6, 1468:9, 1468:24, 1470:6 reservoir [1] - 1469:7 residential [10] - 1440:3, 1440:19, 1440:24, 1441:9, 1441:19, 1441:25, 1478:5, 1482:13, 1483:4, 1484:7 resistance [1] - 1517:2 Resource [1] - 1436:11 resource [3] - 1458:5, 1473:11, 1482:4 resources [5] - 1426:4, 1444:15, 1458:18, 1469:8, 1533:22 Resources [2] - 1417:8, 1423:16 respect [2] - 1478:23, 1527:20 respective [1] - 1421:9 respectively [1] - 1421:12 response [12] - 1461:6, 1492:15, 1493:18, 1494:23, 1494:24, 1495:3, 1503:18, 1503:19, 1505:5, 1518:8, 1518:11, 1519:2 responses [3] - 1458:25, 1487:22, 1489:17 responsibility [1] - 1523:20 responsible [1] - 1523:24 rest [4] - 1432:13, 1533:6, 1533:8, 1533:11 result [5] - 1426:10, 1471:17, 1481:18, 1526:25, 1528:13 resulted [2] - 1491:20, 1526:12 resulting [1] - 1526:12</p>	<p>results [3] - 1490:21, 1491:21, 1501:22 resume [3] - 1424:12, 1436:13, 1437:8 Resume [1] - 1419:20 retirement [1] - 1534:8 retrospective [1] - 1429:16 return [12] - 1495:11, 1495:18, 1495:19, 1495:25, 1496:7, 1496:8, 1498:3, 1507:20, 1507:21, 1507:23, 1508:2, 1508:3 revert [1] - 1461:19 review [16] - 1451:7, 1488:2, 1488:9, 1489:22, 1498:13, 1498:20, 1502:16, 1510:22, 1511:18, 1513:23, 1514:12, 1514:23, 1516:8, 1517:13, 1519:19, 1522:1 reviewed [9] - 1437:5, 1437:8, 1437:11, 1437:17, 1487:15, 1487:22, 1499:12, 1502:15, 1511:19 reviews [1] - 1516:11 rich [1] - 1433:20 ripple [1] - 1470:19 rise [1] - 1431:6 rising [1] - 1471:18 risk [18] - 1426:2, 1426:10, 1427:9, 1433:24, 1439:11, 1445:25, 1446:6, 1446:13, 1449:14, 1452:17, 1452:22, 1453:11, 1453:20, 1461:12, 1509:17, 1513:19, 1514:20, 1517:11 riskiness [1] - 1508:22 risks [6] - 1446:11, 1461:3, 1461:7, 1481:15, 1488:16, 1517:8 risky [2] - 1452:12, 1452:16 Road [1] - 1437:15 ROE [1] - 1496:13 ROGELSTAD [2] - 1418:13, 1523:6 Rogelstad [20] - 1418:19, 1418:20, 1521:16, 1522:3, 1522:12, 1522:15, 1522:20, 1522:24, 1523:13, 1523:15, 1524:14, 1525:7, 1525:12, 1525:21, 1527:6, 1527:14, 1529:14, 1531:23, 1533:2 role [1] - 1450:6 Rolfes [1] - 1489:16 room [3] - 1521:17, 1530:20, 1532:15 rough [1] - 1529:12 roughly [5] - 1468:17,</p>	<p>1468:20, 1468:21, 1528:17, 1529:8 round [1] - 1501:15 running [1] - 1449:3 runs [3] - 1491:14, 1491:20, 1526:1 rural [3] - 1476:25, 1477:1, 1477:4 Rural [1] - 1509:4 Russia [2] - 1433:7, 1462:18</p>
S			
<p>S5 [1] - 1518:15 Safe [1] - 1533:20 sales [5] - 1496:20, 1496:22, 1497:2, 1497:5, 1515:12 sand [1] - 1467:21 sat [1] - 1512:15 satisfaction [1] - 1520:17 satisfied [1] - 1479:23 Saudi [3] - 1433:7, 1453:21, 1461:17 saved [3] - 1447:13, 1458:12, 1458:14 saving [1] - 1517:6 savings [8] - 1444:20, 1481:20, 1515:4, 1515:5, 1515:8, 1515:9, 1515:17, 1515:18 saw [2] - 1462:9, 1477:20 scale [3] - 1453:10, 1493:15, 1510:19 scaling [1] - 1489:13 scary [1] - 1454:7 scenario [2] - 1451:9, 1502:8 scenarios [5] - 1491:1, 1491:3, 1491:4, 1491:7 schedules [1] - 1498:17 Schlissel [5] - 1459:7, 1460:4, 1461:2, 1490:16, 1512:14 Schlissel's [3] - 1458:20, 1458:25, 1518:18 School [1] - 1423:22 school [1] - 1437:2 science [1] - 1524:7 scope [1] - 1450:14 screen [1] - 1425:17 screening [2] - 1510:22, 1517:8 scrutiny [2] - 1513:12, 1513:13 Second [1] - 1534:12 second [9] - 1435:6, 1445:19, 1467:19, 1490:1, 1511:12, 1512:18, 1520:2, 1520:9, 1526:3 section [1] - 1519:15</p>			

<p>sector [1] - 1471:13</p> <p>security [1] - 1433:22</p> <p>see [25] - 1427:23, 1427:25, 1428:14, 1430:5, 1430:10, 1430:24, 1431:19, 1432:6, 1433:2, 1433:25, 1435:16, 1437:14, 1449:17, 1454:1, 1455:15, 1457:2, 1457:6, 1457:9, 1464:7, 1467:18, 1477:15, 1501:8, 1507:7, 1518:14, 1522:1</p> <p>seeing [3] - 1462:17, 1471:21, 1516:14</p> <p>seek [3] - 1473:20, 1474:5, 1509:22</p> <p>seem [4] - 1450:17, 1455:5, 1476:4, 1497:24</p> <p>segment [1] - 1530:1</p> <p>select [1] - 1496:8</p> <p>selected [1] - 1520:19</p> <p>selecting [1] - 1426:3</p> <p>senior [2] - 1423:16, 1449:5</p> <p>sense [5] - 1443:2, 1471:6, 1474:12, 1511:13, 1527:21</p> <p>sensitive [1] - 1468:8</p> <p>sensitivity [1] - 1434:20</p> <p>separate [2] - 1509:17, 1509:22</p> <p>series [1] - 1429:15</p> <p>serious [1] - 1480:20</p> <p>serve [4] - 1460:20, 1460:21, 1476:25, 1482:22</p> <p>Served [1] - 1419:19</p> <p>served [4] - 1434:19, 1434:25, 1435:7, 1444:7</p> <p>Service [5] - 1421:11, 1421:23, 1455:4, 1509:5, 1522:16</p> <p>SERVICE [1] - 1417:3</p> <p>service [9] - 1477:5, 1482:18, 1482:19, 1497:21, 1526:22, 1527:2, 1527:7, 1527:10, 1531:2</p> <p>services [1] - 1531:11</p> <p>set [3] - 1497:23, 1498:7, 1518:22</p> <p>setting [1] - 1454:6</p> <p>SEUR [24] - 1425:5, 1436:5, 1436:7, 1439:15, 1439:20, 1443:16, 1443:21, 1448:10, 1448:14, 1448:16, 1449:1, 1452:10, 1454:11, 1454:21, 1480:5, 1482:6, 1487:3, 1497:12, 1500:3, 1516:2, 1516:4, 1518:19, 1518:20, 1520:24</p> <p>Seur [13] - 1418:4, 1418:7, 1418:10, 1418:12, 1425:4, 1436:4, 1436:10, 1457:20, 1478:19, 1480:3, 1487:2,</p>	<p>1497:9, 1516:1</p> <p>several [9] - 1427:1, 1431:21, 1433:10, 1437:7, 1441:11, 1462:3, 1471:19, 1471:25, 1519:12</p> <p>shale [1] - 1468:1</p> <p>share [4] - 1432:20, 1463:15, 1465:7, 1465:15</p> <p>sharply [1] - 1456:22</p> <p>shift [1] - 1444:17</p> <p>shifting [1] - 1471:3</p> <p>shifts [1] - 1481:18</p> <p>shipping [1] - 1462:10</p> <p>ships [1] - 1473:14</p> <p>short [6] - 1425:11, 1425:12, 1426:11, 1461:21, 1461:25</p> <p>short-term [1] - 1461:21</p> <p>shortages [2] - 1455:17, 1456:6</p> <p>shorter [2] - 1449:22, 1469:13</p> <p>shorter-lived [1] - 1469:13</p> <p>shorthand [4] - 1535:6, 1535:12, 1536:3, 1536:6</p> <p>show [13] - 1421:4, 1431:6, 1431:12, 1432:25, 1440:14, 1450:4, 1463:22, 1465:14, 1466:25, 1468:23, 1483:17, 1502:17, 1518:13</p> <p>showed [1] - 1429:22</p> <p>showing [4] - 1431:19, 1465:17, 1482:13, 1483:24</p> <p>shown [2] - 1431:11, 1432:1</p> <p>shows [7] - 1431:3, 1431:24, 1439:22, 1440:13, 1450:11, 1463:25, 1479:20</p> <p>shut [1] - 1462:7</p> <p>side [3] - 1444:20, 1452:25, 1474:5</p> <p>significant [7] - 1426:9, 1447:17, 1460:24, 1489:24, 1493:20, 1495:23, 1512:1</p> <p>significantly [1] - 1482:18</p> <p>silent [1] - 1445:1</p> <p>similar [5] - 1423:15, 1463:22, 1465:16, 1467:17, 1516:8</p> <p>simple [1] - 1529:2</p> <p>simply [4] - 1426:12, 1481:16, 1529:1, 1531:9</p> <p>single [2] - 1434:10, 1446:3</p> <p>site [1] - 1528:9</p> <p>sites [1] - 1493:23</p> <p>siting [1] - 1493:17</p> <p>situation [7] - 1459:10, 1470:23, 1475:2, 1481:5, 1491:23, 1493:3, 1517:2</p> <p>situations [1] - 1473:17</p>	<p>six [2] - 1488:3, 1488:8</p> <p>sixth [1] - 1433:3</p> <p>size [4] - 1501:1, 1516:6, 1526:12, 1532:6</p> <p>skeptical [1] - 1513:10</p> <p>slide [15] - 1425:25, 1427:23, 1429:12, 1429:14, 1430:23, 1431:15, 1432:4, 1432:25, 1433:25, 1457:3, 1459:12, 1466:17, 1466:24, 1525:23, 1527:1</p> <p>slides [1] - 1435:24</p> <p>slight [2] - 1431:6, 1459:19</p> <p>slightly [1] - 1430:4</p> <p>slow [1] - 1446:19</p> <p>small [1] - 1476:24</p> <p>smaller [2] - 1460:12, 1493:15</p> <p>smaller-scale [1] - 1493:15</p> <p>Smith [2] - 1536:2, 1536:9</p> <p>solar [4] - 1453:4, 1458:13, 1494:13, 1494:14</p> <p>sole [1] - 1423:4</p> <p>solve [1] - 1476:12</p> <p>someone [1] - 1451:21</p> <p>sometimes [4] - 1429:9, 1458:22, 1516:20, 1516:21</p> <p>somewhat [3] - 1467:6, 1470:8, 1479:19</p> <p>somewhere [4] - 1430:14, 1457:8, 1462:24, 1470:20</p> <p>soon [2] - 1453:22, 1531:1</p> <p>sorry [14] - 1428:18, 1441:4, 1442:14, 1443:16, 1448:9, 1451:16, 1456:20, 1459:3, 1464:3, 1467:4, 1484:25, 1520:4, 1521:7, 1527:7</p> <p>sort [8] - 1463:3, 1471:21, 1478:3, 1494:9, 1496:13, 1509:25, 1511:15, 1527:24</p> <p>sound [2] - 1468:19, 1469:3</p> <p>sounds [1] - 1477:13</p> <p>Sounds [1] - 1468:21</p> <p>source [5] - 1426:18, 1435:21, 1443:8, 1476:20, 1500:14</p> <p>Source [2] - 1419:10, 1419:12</p> <p>sources [8] - 1432:7, 1432:17, 1432:18, 1448:6, 1448:12, 1458:10, 1460:18, 1467:6</p> <p>South [1] - 1486:8</p> <p>speakerphone [2] - 1428:23, 1429:7</p> <p>speaking [3] - 1422:8, 1447:22, 1473:4</p> <p>specific [13] - 1440:8, 1451:24, 1460:15, 1468:10, 1476:11,</p>	<p>1477:17, 1489:18, 1501:22, 1512:4, 1517:15, 1518:25, 1531:10, 1531:12</p> <p>specifically [6] - 1451:2, 1451:21, 1460:7, 1468:4, 1475:21, 1511:11</p> <p>speech [1] - 1521:24</p> <p>spell [2] - 1422:22, 1523:11</p> <p>spelled [2] - 1422:24, 1423:3</p> <p>spend [1] - 1534:7</p> <p>spending [1] - 1435:2</p> <p>spikes [3] - 1435:17, 1435:22, 1456:6</p> <p>spin [1] - 1455:23</p> <p>spirit [1] - 1531:8</p> <p>spite [1] - 1442:5</p> <p>split [1] - 1508:14</p> <p>spot [1] - 1474:8</p> <p>spread [4] - 1457:10, 1457:15, 1457:17</p> <p>squarely [1] - 1499:1</p> <p>stable [4] - 1426:25, 1445:13, 1445:18, 1445:20</p> <p>staff [3] - 1455:5, 1485:11, 1533:13</p> <p>stand [3] - 1458:8, 1470:2, 1491:18</p> <p>standing [1] - 1494:12</p> <p>standpoint [1] - 1528:15</p> <p>Stanford [1] - 1423:22</p> <p>Stanley [1] - 1519:8</p> <p>start [2] - 1425:25, 1525:23</p> <p>started [1] - 1459:15</p> <p>starting [1] - 1437:15</p> <p>STATE [1] - 1417:2</p> <p>state [9] - 1422:21, 1447:11, 1465:17, 1476:3, 1477:2, 1486:3, 1523:11</p> <p>State [4] - 1417:17, 1497:16, 1514:8, 1524:8</p> <p>statement [16] - 1422:7, 1440:18, 1443:1, 1443:22, 1445:19, 1446:18, 1446:23, 1450:7, 1455:21, 1456:25, 1473:9, 1476:21, 1479:10, 1479:12, 1492:25, 1527:5</p> <p>statements [3] - 1451:4, 1478:20, 1513:15</p> <p>States [9] - 1448:4, 1448:19, 1460:8, 1468:16, 1468:23, 1471:18, 1472:10, 1480:7, 1494:11</p> <p>states [3] - 1435:7, 1447:12, 1453:17</p> <p>States' [1] - 1453:14</p> <p>statewide [3] - 1476:5, 1477:12, 1483:17</p> <p>station [1] - 1426:11</p> <p>statistics [3] - 1440:9,</p>
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<p>1463:19, 1494:9 steady [1] - 1450:5 steel [1] - 1471:24 step [1] - 1532:12 Stephanie [2] - 1536:2, 1536:9 steps [1] - 1445:16 still [20] - 1442:22, 1458:8, 1460:11, 1491:21, 1494:12, 1500:19, 1501:2, 1502:13, 1502:20, 1502:22, 1503:1, 1504:8, 1504:11, 1507:11, 1507:13, 1507:18, 1508:5, 1508:23, 1515:16, 1534:10 stimulated [1] - 1450:1 stockholders [2] - 1514:3, 1514:19 Stoked [1] - 1419:22 Stone [79] - 1419:19, 1421:10, 1421:24, 1426:8, 1426:11, 1426:16, 1434:2, 1434:19, 1434:25, 1435:7, 1435:14, 1439:3, 1443:12, 1443:13, 1443:19, 1443:22, 1443:25, 1444:21, 1450:20, 1451:10, 1452:1, 1452:2, 1452:7, 1452:12, 1457:21, 1470:14, 1470:19, 1470:24, 1481:17, 1487:17, 1487:25, 1488:11, 1488:15, 1489:4, 1489:12, 1489:15, 1491:21, 1495:8, 1495:21, 1495:23, 1496:4, 1496:11, 1496:21, 1498:8, 1499:7, 1499:14, 1499:18, 1500:13, 1502:1, 1502:5, 1502:11, 1504:17, 1504:18, 1505:7, 1505:11, 1507:18, 1509:23, 1517:7, 1523:24, 1526:1, 1526:2, 1526:4, 1526:5, 1526:14, 1527:3, 1527:8, 1527:11, 1527:23, 1528:6, 1528:9, 1528:12, 1530:3, 1530:7, 1530:8, 1530:9, 1530:11 Stone-Granite [1] - 1526:5 Stoppard [1] - 1449:5 storage [3] - 1437:11, 1480:14, 1481:1 store [2] - 1438:25, 1480:11 straits [1] - 1462:11 Straits [1] - 1462:12 strategic [3] - 1462:11, 1488:17, 1504:5 Strategies [1] - 1423:2 strategy [2] - 1438:15, 1479:25</p>	<p>Strategy [2] - 1423:7, 1423:8 Street [3] - 1424:15, 1448:21, 1486:8 stretch [2] - 1462:3, 1511:1 stringent [2] - 1480:6, 1480:12 strong [2] - 1442:1, 1530:24 studies [4] - 1436:14, 1436:23, 1446:7, 1468:10 study [2] - 1500:15, 1530:5 stuff [1] - 1462:21 Subject [1] - 1464:22 subject [8] - 1485:18, 1488:12, 1498:20, 1500:1, 1513:18, 1518:1, 1520:21, 1523:1 submit [2] - 1482:12, 1483:20 submitted [5] - 1439:17, 1482:4, 1487:20, 1501:16, 1519:1 subscribes [1] - 1497:21 subsequent [1] - 1493:7 subsidiary [1] - 1494:5 substantial [3] - 1468:13, 1474:2, 1497:6 substantially [1] - 1528:24 substantive [1] - 1442:3 substation [1] - 1526:2 substitutes [1] - 1444:24 substituting [1] - 1481:16 subtracts [1] - 1431:17 successful [1] - 1494:19 sufficiently [1] - 1489:7 suggest [8] - 1426:14, 1434:21, 1469:12, 1504:2, 1504:21, 1504:23, 1512:4, 1513:5 suggested [1] - 1489:1 suggests [2] - 1451:14, 1463:7 Suite [1] - 1486:8 sum [4] - 1441:2, 1441:6, 1459:20, 1459:21 summarize [2] - 1518:4, 1519:4 summarized [1] - 1488:23 Summary [2] - 1418:20, 1418:23 summary [9] - 1425:3, 1425:11, 1487:14, 1489:6, 1518:9, 1525:8, 1525:13, 1525:22, 1527:13 supercritical [1] - 1502:1 supplemental [10] - 1421:6, 1424:18, 1486:15, 1487:16, 1487:19, 1488:24, 1501:12, 1507:2, 1510:13, 1524:11 SUPPLEMENTAL [1] -</p>	<p>1417:13 Supplemental [2] - 1418:19, 1420:4 supplemented [1] - 1447:9 supplied [1] - 1454:14 suppliers [2] - 1460:25, 1473:20 supplies [5] - 1435:16, 1450:8, 1468:5, 1471:1, 1472:3 supply [31] - 1426:18, 1427:18, 1432:9, 1432:10, 1435:14, 1449:6, 1450:6, 1453:25, 1455:23, 1456:10, 1456:16, 1458:7, 1461:4, 1461:6, 1461:7, 1461:9, 1461:11, 1461:13, 1461:15, 1461:24, 1462:2, 1462:6, 1462:19, 1463:11, 1463:16, 1465:11, 1466:16, 1469:2, 1469:15, 1470:8, 1499:9 supply-constrained [1] - 1470:8 supply/demand [1] - 1466:15 support [1] - 1446:23 supported [1] - 1490:17 supporter [1] - 1479:14 supporting [1] - 1487:19 supports [2] - 1439:8, 1445:4 Surge [1] - 1419:21 survey [1] - 1478:5 survive [1] - 1516:21 Susan [1] - 1500:22 suspect [1] - 1427:15 suspicious [1] - 1514:5 swings [1] - 1431:14 sworn [3] - 1422:13, 1485:23, 1523:7 sympathy [2] - 1458:4, 1474:15 synthetic [1] - 1453:18 System [1] - 1439:10 system [8] - 1444:1, 1444:4, 1496:20, 1496:22, 1497:2, 1515:12, 1528:7, 1528:14 systems [1] - 1436:24</p>	<p>1476:23, 1477:9, 1477:19, 1483:23, 1503:10, 1503:14, 1503:22, 1505:10, 1506:5, 1507:15, 1508:3, 1523:17, 1524:1, 1524:3, 1524:4 tail's [1] - 1482:19 Tail's [4] - 1482:25, 1495:6, 1495:10, 1505:6 Tallahassee [2] - 1486:7, 1486:9 tandem [1] - 1498:11 tank [2] - 1438:20, 1469:10 tankers [1] - 1454:16 tar [1] - 1467:21 tax [4] - 1488:19, 1490:25, 1491:2, 1507:22 taxes [3] - 1507:23, 1507:25, 1508:2 team [1] - 1438:14 tease [1] - 1471:11 technologies [4] - 1443:8, 1467:15, 1469:19, 1519:14 technology [3] - 1429:8, 1480:17, 1481:1 Technology [1] - 1423:20 telephone [1] - 1421:16 temporary [1] - 1509:7 ten [3] - 1433:7, 1469:2, 1469:10 tend [7] - 1426:24, 1427:20, 1461:19, 1461:20, 1477:3, 1477:5, 1477:6 tender [2] - 1436:3, 1529:15 tens [1] - 1434:12 term [18] - 1427:4, 1429:20, 1450:5, 1458:17, 1461:21, 1461:25, 1462:13, 1462:19, 1463:3, 1473:23, 1498:19, 1514:2, 1515:5, 1515:9, 1515:18, 1517:12, 1530:15 termination [1] - 1491:11 terms [9] - 1446:9, 1456:15, 1458:7, 1469:12, 1474:18, 1483:9, 1509:16, 1511:8, 1531:25 terrible [1] - 1456:7 territory [2] - 1482:18, 1482:19 Terry [3] - 1420:4, 1485:12, 1486:4 TERRY [2] - 1418:8, 1485:22 testified [6] - 1422:3, 1422:13, 1485:24, 1486:13, 1512:6, 1523:8 testify [1] - 1446:11 testifying [1] - 1450:17 Testimony [3] - 1418:19, 1418:21, 1420:4</p>
T			
<p>tab [3] - 1421:21, 1424:9, 1501:19 table [4] - 1451:24, 1463:25, 1464:25, 1465:16 tabulation [1] - 1478:4 Tail [19] - 1417:5, 1421:8, 1457:25, 1476:17,</p>			

<p>testimony [73] - 1421:19, 1421:24, 1422:4, 1423:24, 1424:19, 1424:22, 1425:11, 1426:1, 1426:2, 1426:4, 1426:9, 1427:1, 1439:14, 1439:16, 1439:17, 1439:21, 1439:22, 1439:24, 1439:25, 1440:1, 1440:21, 1441:8, 1443:11, 1444:6, 1445:13, 1446:23, 1446:25, 1447:7, 1449:13, 1450:17, 1451:2, 1451:13, 1456:19, 1458:21, 1473:10, 1478:17, 1480:25, 1481:8, 1481:25, 1483:11, 1485:17, 1486:15, 1486:19, 1486:22, 1487:14, 1487:19, 1488:24, 1488:25, 1489:1, 1489:17, 1490:13, 1492:12, 1500:10, 1501:6, 1501:7, 1501:8, 1501:13, 1501:16, 1507:2, 1509:1, 1510:14, 1511:13, 1512:16, 1517:20, 1518:18, 1522:3, 1522:17, 1522:21, 1522:25, 1524:11, 1525:8, 1529:25</p> <p>thankful [1] - 1534:9</p> <p>THE [18] - 1417:22, 1422:1, 1428:19, 1429:2, 1429:6, 1429:13, 1439:16, 1443:18, 1451:20, 1454:13, 1485:3, 1485:20, 1487:10, 1506:6, 1521:13, 1522:19, 1523:3, 1533:3</p> <p>themselves [3] - 1513:22, 1518:9, 1518:24</p> <p>theoretically [1] - 1517:18</p> <p>theory [1] - 1458:1</p> <p>thereabouts [1] - 1521:17</p> <p>therefore [2] - 1427:8, 1481:6</p> <p>thermal [2] - 1494:14, 1531:25</p> <p>they've [1] - 1437:20</p> <p>thinking [8] - 1455:14, 1456:17, 1468:4, 1469:24, 1470:7, 1472:25, 1473:8, 1476:15</p> <p>third [5] - 1467:20, 1490:22, 1512:19, 1520:2, 1520:9</p> <p>Thomas [1] - 1486:6</p> <p>thorough [2] - 1510:17, 1511:9</p> <p>thoughts [2] - 1507:5, 1507:10</p> <p>three [4] - 1475:12, 1484:2,</p>	<p>1488:5, 1489:10</p> <p>throughout [2] - 1445:9, 1494:6</p> <p>throws [1] - 1509:18</p> <p>tie [1] - 1462:14</p> <p>tied [1] - 1531:12</p> <p>tier [1] - 1467:22</p> <p>tight [2] - 1430:6, 1466:15</p> <p>tighter [1] - 1507:9</p> <p>timing [1] - 1526:7</p> <p>TIMOTHY [2] - 1418:13, 1523:6</p> <p>Timothy [3] - 1418:19, 1418:20, 1523:13</p> <p>today [6] - 1460:10, 1475:3, 1476:8, 1476:18, 1486:21, 1516:17</p> <p>Todd [2] - 1478:15, 1521:14</p> <p>together [6] - 1428:16, 1441:13, 1441:14, 1442:4, 1482:15, 1498:12</p> <p>tons [1] - 1439:5</p> <p>Tony [1] - 1475:11</p> <p>took [3] - 1436:22, 1491:17, 1514:5</p> <p>top [11] - 1430:24, 1431:3, 1433:7, 1446:12, 1448:3, 1457:4, 1457:7, 1467:22, 1482:25, 1495:5, 1512:16</p> <p>topic [2] - 1466:14, 1475:21</p> <p>total [4] - 1433:13, 1434:11, 1458:12, 1476:5</p> <p>touch [2] - 1490:1, 1490:22</p> <p>tougher [2] - 1507:8</p> <p>towards [1] - 1507:14</p> <p>towns [2] - 1476:24, 1482:22</p> <p>track [1] - 1461:20</p> <p>Trade [1] - 1419:22</p> <p>trade [1] - 1433:22</p> <p>traded [1] - 1427:13</p> <p>tradeoffs [2] - 1426:11, 1445:22</p> <p>traditionally [1] - 1458:10</p> <p>transcript [2] - 1535:12, 1536:6</p> <p>TRANSCRIPT [1] - 1417:12</p> <p>transfer [1] - 1463:4</p> <p>transitioning [1] - 1427:11</p> <p>transmission [21] - 1490:7, 1523:20, 1523:21, 1523:24, 1525:24, 1525:25, 1526:10, 1526:13, 1526:19, 1527:1, 1527:8, 1527:9, 1527:23, 1528:3, 1528:5, 1528:7, 1528:23, 1528:25, 1529:9, 1529:10, 1530:25</p> <p>transportation [3] - 1460:19, 1461:23, 1465:12</p> <p>travels [1] - 1533:20</p>	<p>Trechock [1] - 1436:12</p> <p>trend [2] - 1430:18, 1516:10</p> <p>trends [3] - 1427:5, 1427:6, 1471:21</p> <p>tried [1] - 1451:23</p> <p>trillion [1] - 1432:25</p> <p>trillion [8] - 1462:25, 1463:8, 1463:9, 1466:25, 1467:4, 1468:19, 1468:22, 1468:24</p> <p>Trinidad [1] - 1460:12</p> <p>trouble [2] - 1480:20, 1482:20</p> <p>true [2] - 1422:8, 1472:11</p> <p>truisms [1] - 1455:16</p> <p>truly [2] - 1472:21, 1495:9</p> <p>trust [1] - 1533:21</p> <p>try [4] - 1429:1, 1466:12, 1467:11, 1508:24</p> <p>trying [6] - 1458:5, 1459:2, 1476:12, 1493:12, 1514:21, 1527:21</p> <p>turbine [1] - 1490:3</p> <p>turbines [2] - 1455:23, 1509:24</p> <p>turbulence [1] - 1509:20</p> <p>turbulent [1] - 1458:6</p> <p>turmoil [1] - 1462:6</p> <p>Turn [1] - 1495:4</p> <p>turn [12] - 1425:19, 1427:23, 1430:23, 1432:4, 1433:25, 1441:4, 1460:1, 1470:21, 1475:13, 1478:17, 1499:21, 1499:22</p> <p>Turning [3] - 1444:18, 1526:18, 1527:1</p> <p>Twenty [5] - 1423:2, 1423:3, 1423:6, 1423:7, 1423:8</p> <p>Twenty-First [5] - 1423:2, 1423:3, 1423:6, 1423:7, 1423:8</p> <p>twice [2] - 1430:14, 1435:17</p> <p>two [24] - 1430:24, 1431:4, 1434:19, 1441:6, 1441:13, 1441:14, 1445:16, 1448:18, 1449:6, 1450:9, 1453:17, 1459:20, 1476:8, 1477:22, 1479:5, 1488:4, 1493:22, 1498:10, 1505:17, 1512:15, 1525:24, 1528:11, 1531:19, 1532:7</p> <p>type [3] - 1426:3, 1482:5, 1516:11</p> <p>types [4] - 1426:7, 1445:6, 1445:22, 1462:3</p> <p>typewritten [2] - 1535:10, 1536:5</p>	<p style="text-align: center;">U</p> <p>U.S. [19] - 1419:10, 1429:24, 1432:7, 1433:3, 1433:4, 1433:11, 1438:13, 1441:7, 1449:10, 1449:19, 1450:4, 1454:1, 1460:1, 1460:20, 1460:24, 1461:17, 1463:18, 1468:5, 1469:3</p> <p>U.S.-wide [1] - 1478:4</p> <p>Uggerud [1] - 1512:13</p> <p>Ukraine [1] - 1438:15</p> <p>unaware [1] - 1486:20</p> <p>uncertain [1] - 1434:8</p> <p>uncertainties [1] - 1461:3</p> <p>unclear [1] - 1449:23</p> <p>under [4] - 1422:4, 1485:18, 1501:19, 1523:1</p> <p>underlie [1] - 1433:21</p> <p>understatement [1] - 1489:14</p> <p>understood [2] - 1442:14, 1483:2</p> <p>underway [2] - 1460:13, 1480:15</p> <p>Unintelligible [1] - 1428:17</p> <p>unit [7] - 1470:25, 1488:16, 1495:8, 1510:6, 1528:16, 1529:3, 1529:5</p> <p>Unit [5] - 1502:1, 1502:5, 1502:11, 1527:4, 1527:12</p> <p>United [10] - 1448:4, 1448:19, 1453:14, 1460:8, 1468:16, 1468:23, 1471:18, 1472:10, 1480:7, 1494:11</p> <p>units [7] - 1492:20, 1492:24, 1493:1, 1493:21, 1493:22, 1494:20, 1504:11</p> <p>University [1] - 1524:8</p> <p>unknowns [1] - 1516:16</p> <p>unlike [1] - 1478:2</p> <p>unlikely [2] - 1446:20, 1470:15</p> <p>unregulated [1] - 1494:4</p> <p>unstable [1] - 1449:15</p> <p>up [23] - 1421:17, 1421:20, 1422:10, 1422:11, 1431:8, 1439:22, 1449:25, 1454:6, 1456:4, 1459:24, 1461:21, 1478:4, 1478:16, 1479:20, 1503:4, 1503:13, 1503:25, 1505:7, 1505:13, 1519:10, 1528:8, 1530:20, 1531:1</p> <p>Up [1] - 1432:10</p> <p>updated [4] - 1477:21, 1489:4, 1501:23, 1502:16</p> <p>upward [1] - 1492:17</p> <p>urban [2] - 1436:14, 1436:23</p>
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<p>usage [3] - 1476:6, 1477:10, 1477:18 useful [1] - 1477:20 user [1] - 1473:5 uses [4] - 1440:3, 1440:20, 1440:24, 1471:14 Utilities [3] - 1417:7, 1421:8, 1509:5 utilities [12] - 1429:24, 1431:2, 1431:6, 1438:9, 1447:11, 1498:11, 1499:2, 1499:19, 1511:17, 1511:24, 1516:25, 1523:22 utility [6] - 1451:4, 1498:10, 1498:14, 1501:24, 1509:21, 1514:14 utilize [2] - 1472:22, 1473:11 utilized [1] - 1491:3</p>	<p>vulnerability [1] - 1456:16 vulnerable [3] - 1435:5, 1459:22, 1462:13</p>	<p>1506:16, 1521:4, 1521:21 Welcome [1] - 1506:23 welcome [1] - 1485:3 well-founded [1] - 1450:11 well-functioning [1] - 1460:18 Western [1] - 1462:15 western [1] - 1433:16 whole [2] - 1444:10, 1483:7 widely [1] - 1514:7 wild [1] - 1431:13 William [1] - 1455:3 willing [3] - 1463:21, 1483:19, 1515:2 Wind [1] - 1458:13 wind [16] - 1452:11, 1452:25, 1453:3, 1488:3, 1488:19, 1488:20, 1490:25, 1491:3, 1493:15, 1494:10, 1500:13, 1509:24, 1528:20, 1528:22, 1528:24, 1533:22 wind-generating [1] - 1528:20 wind/gas [1] - 1527:24 winter [1] - 1435:10 wisdom [1] - 1455:15 Wise [1] - 1497:17 wish [3] - 1490:1, 1490:22, 1522:12 withdrawn [1] - 1454:11 withhold [1] - 1462:5 witness [7] - 1466:6, 1492:2, 1503:11, 1518:13, 1521:23, 1529:20, 1533:5 WITNESS [17] - 1422:1, 1428:19, 1429:2, 1429:6, 1429:13, 1439:16, 1443:18, 1451:20, 1454:13, 1485:3, 1485:20, 1487:10, 1506:6, 1521:13, 1522:19, 1523:3, 1533:3 WITNESSES [1] - 1418:2 wondered [1] - 1464:14 wondering [1] - 1507:5 word [1] - 1504:24 words [3] - 1422:8, 1468:7, 1472:7 works [1] - 1429:7 world [29] - 1427:13, 1427:17, 1430:9, 1432:5, 1432:24, 1433:1, 1433:4, 1449:5, 1449:15, 1450:8, 1450:12, 1453:24, 1454:18, 1456:12, 1460:2, 1463:6, 1465:1, 1466:24, 1467:20, 1469:24, 1470:16, 1470:19, 1471:1, 1472:5, 1473:23, 1474:7, 1481:16, 1481:18</p>	<p>World [1] - 1419:14 world's [6] - 1433:13, 1462:11, 1463:9, 1463:11, 1463:15, 1466:15 worldwide [4] - 1448:12, 1448:18, 1463:10, 1463:23 worsened [1] - 1427:25 worst [1] - 1502:7 Wow [1] - 1487:10</p>
V	W		X
	<p>Wahl [3] - 1421:22, 1428:25, 1522:16 WAHL [87] - 1417:22, 1421:4, 1421:22, 1422:2, 1422:15, 1425:1, 1425:4, 1425:6, 1425:8, 1428:18, 1428:20, 1428:25, 1429:4, 1429:10, 1436:4, 1451:18, 1454:12, 1454:22, 1464:3, 1464:6, 1464:9, 1464:11, 1464:24, 1465:4, 1465:25, 1466:3, 1466:7, 1475:5, 1478:10, 1480:3, 1482:7, 1482:9, 1484:6, 1484:20, 1484:25, 1485:5, 1485:8, 1485:13, 1485:21, 1487:2, 1487:4, 1487:8, 1487:12, 1492:4, 1497:9, 1500:4, 1500:6, 1505:14, 1505:20, 1505:24, 1506:2, 1506:12, 1506:14, 1506:18, 1512:8, 1515:21, 1515:24, 1516:1, 1521:1, 1521:6, 1521:9, 1521:11, 1521:19, 1522:11, 1522:15, 1522:20, 1523:4, 1525:2, 1525:4, 1525:6, 1525:15, 1525:17, 1525:19, 1529:16, 1529:18, 1529:21, 1531:15, 1531:18, 1532:20, 1532:22, 1532:24, 1533:1, 1533:9, 1533:12, 1533:15, 1534:1, 1534:13 Wahl's [1] - 1534:7 wait [1] - 1485:7 Wall [2] - 1424:15, 1448:21 warming [1] - 1480:8 warned [1] - 1426:5 water [2] - 1455:23, 1459:23 wave [1] - 1456:8 ways [3] - 1452:6, 1472:20, 1479:24 wealth [1] - 1463:4 weather [1] - 1474:21 Wednesday [2] - 1421:2, 1534:15 weeks [2] - 1461:25, 1473:19 Wefald [3] - 1418:10, 1500:6, 1506:15 WEFALD [10] - 1465:19, 1465:23, 1466:5, 1485:9, 1500:5, 1500:8, 1500:24,</p>		Xcel [2] - 1450:24, 1451:6
V			Y
<p>valid [2] - 1504:19, 1509:11 valuable [1] - 1455:22 value [2] - 1474:7, 1515:15 variation [2] - 1431:9, 1431:16 various [2] - 1452:5, 1466:18 vary [2] - 1434:12, 1465:19 vast [1] - 1514:13 Venezuela [1] - 1433:8 verify [1] - 1533:21 version [4] - 1487:17, 1488:10, 1504:16, 1504:17 versus [5] - 1461:5, 1475:19, 1477:23, 1483:7, 1527:24 vessel [1] - 1459:24 via [1] - 1527:16 viable [1] - 1480:12 vice [1] - 1423:16 view [4] - 1430:7, 1430:10, 1480:19, 1520:18 viewed [1] - 1444:7 Virginia [4] - 1497:16, 1497:17, 1497:22, 1498:3 voice [1] - 1455:5 volatile [5] - 1426:22, 1427:16, 1427:21, 1435:20, 1474:20 volatility [14] - 1427:2, 1427:7, 1430:22, 1431:20, 1433:23, 1434:21, 1439:11, 1441:17, 1441:23, 1442:12, 1442:18, 1442:25, 1443:2, 1443:5 voltage [1] - 1525:25 VOLUME [1] - 1417:19 volume [1] - 1487:6 voluntary [1] - 1438:10</p>			<p>year [22] - 1428:3, 1428:4, 1428:9, 1429:19, 1429:25, 1430:11, 1430:18, 1430:21, 1434:7, 1442:7, 1447:19, 1461:18, 1462:25, 1463:1, 1466:21, 1466:22, 1479:5, 1479:20, 1479:21, 1526:11, 1528:18 Year [1] - 1419:5 year-to-year [1] - 1461:18 years [27] - 1422:11, 1423:14, 1427:25, 1428:6, 1429:18, 1429:21, 1430:5, 1430:15, 1431:7, 1437:4, 1447:15, 1448:19, 1449:7, 1450:9, 1456:22, 1460:11, 1462:1, 1462:17, 1465:10, 1467:19, 1469:10, 1478:5, 1479:4, 1479:16, 1511:20, 1524:5 years' [1] - 1469:2 yesterday [6] - 1455:7, 1458:21, 1464:13, 1505:18, 1512:23, 1527:15 Yon [1] - 1486:7</p>
V			Z
			<p>zero [1] - 1432:2</p>