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6 THE SHIFTING GEOPOLITICS OF OIL AND GAS

7 TUESDAY, JUNE 26, 2018

8 House of Representatives

9 Subcommittee on Energy

10 Committee on Energy and Commerce

11 Washington, D.C.

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15 The subcommittee met, pursuant to call, at 1:00 p.m., in  
16 Room 2123 Rayburn House Office Building, Hon. Fred Upton  
17 [chairman of the subcommittee] presiding.

18 Members present: Representatives Upton, Olson, Barton,  
19 Shimkus, Latta, Harper, McKinley, Kinzinger, Griffith,  
20 Johnson, Bucshon, Flores, Mullin, Hudson, Walberg, Duncan,  
21 Walden (ex officio), McNerney, Peters, Green, Doyle, Welch,  
22 Tonko, Kennedy, Butterfield, and Pallone (ex officio).

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23           Staff present: Mike Bloomquist, Deputy Staff Director;  
24           Samantha Bopp, Staff Assistant; Karen Christian, General  
25           Counsel; Kelly Collins, Legislative Clerk,  
26           Energy/Environment; Wyatt Ellertson, Professional Staff,  
27           Energy/Environment; Margaret Tucker Fogarty, Staff Assistant;  
28           Adam Fromm, Director of Outreach and Coalitions; Jordan  
29           Haverly, Policy Coordinator, Environment; Bijan Koohmaraie,  
30           Counsel, Digital Commerce and Consumer Protection; Mary  
31           Martin, Chief Counsel, Energy/Environment; Sarah Matthews,  
32           Press Secretary; Drew McDowell, Executive Assistant; Brandon  
33           Mooney, Deputy Chief Counsel, Energy; Mark Ratner, Policy  
34           Coordinator; Annelise Rickert, Counsel, Energy; Peter  
35           Spencer, Professional Staff Member, Energy; Austin  
36           Stonebraker, Press Assistant; Madeline Vey, Policy  
37           Coordinator, Digital Commerce and Consumer Protection; Hamlin  
38           Wade, Special Advisor, External Affairs; Caitlin Haberman,  
39           Minority Professional Staff Member; Rick Kessler, Minority  
40           Senior Advisor and Staff Director, Energy and Environment;  
41           John Marshall, Minority Policy Coordinator; Alexander Ratner,  
42           Minority Policy Analyst; Tuley Wright, Minority Energy and  
43           Environment Policy Advisor; and Catherine Zander, Minority  
44           Environment Fellow.

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45           Mr. Upton. Good afternoon. Sorry we are a little  
46 delayed in starting but we had three votes on the House floor  
47 and they are just finishing up. And so we will get started.

48           So, good afternoon, and, certainly, welcome to this  
49 Energy Subcommittee hearing on "The Shifting Geopolitics of  
50 Oil and Gas."

51           So this hearing is especially timely because here in  
52 D.C., right now, energy ministers and CEOs from around the  
53 world are gathering for the 27th World Gas Conference to  
54 examine important opportunities in energy trends happening  
55 across the globe. And while it's an international conference  
56 for sure, the U.S.'s role as a world leader in energy is sure  
57 to be the focus.

58           So, before we arrived at this current era of energy  
59 abundance, some of you may remember that as little as a  
60 decade ago America's energy landscape was in a lot different  
61 state than it is today.

62           In 2005, American domestic oil and gas production was  
63 declining and the country reached a point of peak reliance on  
64 foreign sources of energy, and at that time we were importing  
65 eight times more energy than we were exporting and we were  
66 becoming increasingly dependent on OPEC nations for our

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67 energy needs.

68 It was right around that time that this important  
69 technological breakthrough pioneered by American companies --  
70 namely, horizontal drilling and hydraulic fracturing --  
71 dramatically altered our energy outlook.

72 These technological breakthroughs led to a surge in  
73 domestic oil and gas production, decreasing U.S. reliance on  
74 energy imports.

75 As for today, and we will see that this trend has not  
76 slowed down -- in fact, energy -- EIA projects that by 2022,  
77 the U.S. will become a net energy exporter for the first time  
78 in over half a century.

79 It should be noted that America's emergence as a major  
80 energy supplier to the world is thanks, in part, to Congress'  
81 lifting the 40-year-old crude oil export ban in 2015, and I  
82 would note, that was bipartisan. President Obama signed it  
83 into law.

84 Removing the ban has enabled our companies to take  
85 advantage of global energy markets and has resulted in more  
86 American jobs for sure, a stronger economy for sure, lower  
87 emissions, indeed, and it's helping to reduce our trade  
88 deficit.

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89           The national security and energy security benefits  
90           provided by the shale energy revolution cannot be overstated.  
91           Every day, we are less dependent on foreign nations and  
92           cartels, such as OPEC, to meet our domestic energy needs.

93           Instead, we are now employing American workers and  
94           American technologies to harness our own standard and  
95           abundant domestic resources in a way that is growing the  
96           economy, protecting the environment, and improving our energy  
97           security.

98           So today we are holding this hearing to take a closer  
99           look at how the U.S.'s growing role as a global energy leader  
100          is benefitting consumers and enhancing the nation's standing  
101          on the geopolitical world stage.

102          To provide insight on these topics, we have a great  
103          panel of four witnesses with extensive experience working in  
104          and around the U.S. oil and gas industry.

105          As part of today's panel we have Dr. Daniel Yergin, a  
106          Pulitzer Prize-winning author and a world-renowned energy  
107          expert who many of us say literally wrote the book.

108          Dr. Yergin is joined by Harold Hamm, the CEO of  
109          Continental Resources, which is a highly successful oil  
110          exploration and production company that he himself founded,

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111 and he had an instrumental role in making sure that we lifted  
112 that crude oil ban.

113 We also have Dennis Arriola, the chief strategy officer  
114 for Sempra, a Fortune 500 energy services company that serves  
115 40 million customers -- consumers around the world.

116 And rounding up the lineup, we have got Dr. Kevin  
117 Kennedy, a deputy director at the World Resources Institute,  
118 a global research organization that spans more than 50  
119 countries and focuses on the nexus of environment economic  
120 opportunity and human wellbeing.

121 So I want to thank all of you for joining us, for  
122 twiddling your thumbs for 30 minutes while we cast some  
123 mighty important votes on the House floor, and I know yield  
124 to the acting ranking member of the subcommittee, Mr.  
125 McNerney, our friend from California, taking Bobby Rush's  
126 place this afternoon, who's getting married.

127 [The prepared statement of Mr. Upton follows:]

128

129 \*\*\*\*\*INSERT 1\*\*\*\*\*

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130           Mr. McNerney. Getting married Saturday.

131           Well, thank you, Mr. Chairman, for yielding to me. I  
132 want to thank the panelists, and I think you're all  
133 interesting and I am looking forward to hearing what you have  
134 to say and I hope we get very diverse set of opinions about  
135 the issues here.

136           It's important to have this conversation with industry  
137 leaders and with policy leaders and with people that  
138 understand the business.

139           We have world gas conference nearby and this is topical,  
140 but the topic that's listed here -- the shifting geopolitics  
141 of oil and gas -- is a little too narrow.

142           We should be including other topics like renewables,  
143 storage, and other resources that are impacting our energy  
144 markets. LNG and crude oil exports have changed in the last  
145 decade.

146           When I first got elected in 2007, we were worried about  
147 our dependence on foreign oil. That's changed. That's  
148 possibly a good thing. But we continue to need a very  
149 diverse -- we continue to need a very diverse energy mix. It  
150 won't help us, I don't think, to depend -- become overly  
151 dependent on oil and/or gas.

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152           We need political compromise to get there. If one side  
153           or the other dominates, I think we are going to go down a  
154           path that's unsustainable. So we need political compromise  
155           on this and all the other issues including tax reform.

156           Renewables -- you know, the interesting things is that  
157           the energy market is really shifting to electricity now. We  
158           have electric vehicles growing, especially in California but  
159           in other states as well.

160           So we are going to see more and more and dependence on  
161           electricity as a product. It's not necessarily a resource a  
162           but as a product. So we need to be -- we need to have  
163           policies that's going to support that shift.

164           We have energy storage, another thing that's going to be  
165           very important in terms of shifting where we get our energy  
166           from.

167           Concerning the Paris agreement, the United States was a  
168           leader in this agreement. We are still in the -- we are  
169           still in terms of cities and states declaring that they are  
170           going to continue to abide by the terms of the Paris Climate  
171           Accord. I think that's very inspiring to me.

172           And I want to say to the witnesses, Dr. Yergin, your  
173           scholarship has advanced the field of energy. I really

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174 appreciate what you've been able to accomplish in terms of  
175 providing the history.

176 And one of the things that strikes me about your  
177 scholarship is that we see a cyclical market. The oil market  
178 goes in very big cycles about every 10 or 15 years, and right  
179 now we are on a low energy cost part of that cycle.

180 But I think that's probably going to change in a another  
181 five years, based on history -- nothing more.

182 Mr. Kennedy, World Resources Institute climate  
183 initiative is a the gold standard for providing advice. So  
184 thank you for coming today.

185 Mr. Arriola, Sempra holds utilities in my home state and  
186 has a diverse generation of energy assets here and abroad. I  
187 hope it stays that way.

188 And Mr. Hamm, you have been a leader and I appreciate  
189 what horizontal drilling has done to the energy markets in  
190 this country. We need to keep an eye on that to make sure  
191 that it doesn't cause problems in our states.

192 We know that there is problems with earthquakes. We  
193 know that there is potential problems with groundwater  
194 contamination and so on. So it's important to keep an eye on  
195 that.

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196           At any rate, I am going to yield if any Democrats want  
197           to take a minute or two, and with that I yield back to the  
198           chair.

199           Mr. Upton. The gentleman yields back. The chair  
200           recognizes the chair of the full committee, Mr. Walden, for  
201           an opening statement.

202           The Chairman. Thank you very much, Mr. Chairman. To  
203           our panelists, welcome. Thank you for being here today and  
204           sharing with us on these issues that are so important. We  
205           have an excellent lineup of witnesses, Mr. Chairman, and we  
206           are going to learn a lot.

207           This is, of course, a big week in Washington, D.C. It  
208           is when America hosts the World Gas Conference. They call it  
209           the Olympics of natural gas, and indeed, it is.

210           It brings together hundreds -- actually, thousands of  
211           participants in energy ministers and CEOs from global energy  
212           companies to discuss strategic, commercial and technical  
213           issues facing this really important American industry.

214           It's been 30 years. Ronald Reagan was president the  
215           last time America hosted this and the energy picture was  
216           quite different then than it is today.

217           So it's kind of interesting to reflect back on those

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218 times. But today, the United States is the world's number-  
219 one producer of petroleum and natural gas. Our markets are  
220 more open, transparent, and competitive than they've ever  
221 been.

222 Prices for consumers are low and stable. There are  
223 always ups and downs. But we have cut our imports by about  
224 75 percent since they peaked in 2005, and if this trend  
225 continues we will be net energy exporters in just a few short  
226 years.

227 We got there by repealing the Jimmy Carter era supply  
228 and price controls to encourage a free market for energy  
229 commodities.

230 We have taken steps to improve our regulatory policies -  
231 - we know we have a lot more to do there -- and reform our  
232 outdated tax code to encourage domestic production.

233 Piece by piece, we have removed restrictions on energy  
234 trade to allow American energy to compete in the global  
235 marketplace, and Mr. Hamm's done a lot in that effort  
236 globally.

237 Most recently, as members on this committee will  
238 remember, we repealed the 40-year-old ban on crude oil. Now,  
239 just two years later, we are exporting more than 12 million

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240 barrels per day of crude oil to countries around the world.

241 This is big. The shale revolution, now 10 years in the  
242 making, has had an enormously positive impact on the economy.  
243 It's created hundreds of thousands of jobs, billions of  
244 dollars in investment that wouldn't have happened were it not  
245 for our energy abundance in the United States.

246 The jobs and investments are widespread. They are  
247 across all sectors of the economy in all 50 states. It's  
248 also had a big impact on our power sector and with the shift  
249 to abundant and cheap natural gas we have seen a huge  
250 reduction in our carbon emissions -- enormous.

251 In fact, the U.S. is leading the world in reducing  
252 carbon emissions, and by a large margin. Since peaking in  
253 2005, our carbon emissions have declined steadily and this  
254 trend looks likely to continue.

255 This just goes to how you don't always need a  
256 government mandate to get it done if you believe in the free  
257 market system and innovation that comes from it.

258 We can do a lot of clean up the environment and create  
259 great American jobs and develop American energy. So we are  
260 seeing these benefits today, and as we emerge as the world-  
261 leading LNG exporter, our trading partners will share in this

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262 good fortune.

263 The outlook for American energy is bright, with  
264 plentiful reserves, a highly-skilled workforce, pro-growth  
265 regulations.

266 Our energy production will continue to grow and, with  
267 this growth, America will see even greater economic,  
268 geopolitical, and environmental benefits along with  
269 additional opportunities to help our American allies abroad  
270 who are in need of reliable and affordable supplies of  
271 energy, not held hostage for their energy by less than  
272 friendly countries.

273 I'd like to thank the witnesses again for participating  
274 today and we appreciate you sharing your experiences, your  
275 knowledge, and your ideas with us about how we can continue  
276 to grow American jobs, develop American energy, and enjoy the  
277 economic and environmental benefits that come from that.

278 [The prepared statement of Chairman Walden follows:]

279

280 \*\*\*\*\*INSERT 2\*\*\*\*\*

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281           The Chairman. With that, I've got a minute and a half  
282           left. If anybody on our side wants to use that I'd be happy  
283           to yield.

284           Mr. Barton, former chairman of the committee, the vice  
285           chair of the full committee, I would yield such time as you  
286           may use.

287           Mr. Barton. Thank you, Mr. Chairman. I, basically,  
288           just want to welcome the panel. I know three of you  
289           personally and the fourth one I am sure I'd love to know  
290           personally if I did.

291           So our committee, in the time I've been on it, starting  
292           back when John Dingell was chairman, has led the Congress in  
293           energy legislation, and we have gone from where in the '70s  
294           and early '80s we were trying to restrict the use of things  
295           like natural gas and put price controls on various things and  
296           our natural resources because we thought that we were  
297           entering an era of scarcity to the point where we are now in  
298           an -- I won't say an era of surplus but in an era where we  
299           are on the verge of being the dominant energy producer in the  
300           world and, you know, I think that's a good thing, and you  
301           gentlemen have helped lead that effort.

302           Of course, Mr. Yergin, he's probably the premier -- I

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303 won't say statistician or historian but he's certainly one of  
304 the leading experts in the world. So we are glad to have you  
305 especially, sir.

306 And with that, Mr. Chairman, I yield back my two  
307 seconds.

308 The Chairman. I yield back.

309 Mr. Upton. Time is expired. The chair would recognize  
310 the ranking member of the full committee, Mr. Pallone from  
311 New Jersey, for an opening statement.

312 Mr. Pallone. Thank you, Mr. Chairman. After nearly two  
313 years of Republican control of all branches of government, my  
314 Republican colleagues have little to show for their efforts,  
315 and the little they have accomplished is benefitting the  
316 wealthy to the detriment of the middle class and the  
317 vulnerable.

318 Just think about it -- skyrocketing health care premiums  
319 and growing numbers of the uninsured, a widely unpopular  
320 Trump tax scam, trillions of dollars in new and mounting  
321 debt, and now a devastating Trump-inflicted policy that  
322 stripped thousands of children from their parents.

323 So faced with the failure of their policies, Republicans  
324 have started to retreat to their safe spaces, including

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325 proposing draconian cuts to Medicare, Medicaid, and Social  
326 Security as part of their new budget and now, of course,  
327 today's old favorite -- cheerleading for fossil fuels.

328         The latest version of this tired old story has  
329 Republicans going so far as to trying to legislatively  
330 blackmail states like New Jersey, that have stood up to the  
331 administration's oil above all agenda, by imposing sizeable  
332 fees on any state that refuses to rubber stamp President  
333 Trump's offshore drilling expansion policy.

334         Early this year, New Jersey governor Phil Murphy  
335 listened to our coastal communities and blocked offshore oil  
336 and gas drilling in state waters.

337         The Jersey shore where I live is a priceless national  
338 treasure that is an engine for our tourism industry that  
339 generates \$38 billion a year and one of the largest  
340 recreational fishing industries in the nation.

341         That's all threatened by offshore drilling, which will  
342 destroy our coastal economy. We simply don't need to risk  
343 the health and vitality of our coastal communities for the  
344 sake of putting more fossil fuels into our energy mix.

345         We have seen this show before. First, rising gasoline  
346 costs or something else moves us toward reducing our

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347 dependence on fossil fuels. Then, in response, fossil fuel  
348 industry executives come to Congress to tell us that the only  
349 solution to our problems is to ramp up drilling and decrease  
350 restrictions on their industry in order to increase supply.

351 That's happening today, as reckless Republican policies  
352 have led to a significant jump in the price of gasoline since  
353 March. In fact, the price of gas has gone up nearly 25  
354 percent since President Trump took office.

355 You'd think that would lead to an effort to support  
356 cleaner less gas-guzzling vehicles. But that logic is lost  
357 on President Trump and his ethically-challenged EPA  
358 administrator, Scott Pruitt, who have gone completely in the  
359 opposite direction.

360 They have moved aggressively against clean cars and a  
361 diverse 21st century energy policy. Instead, President Trump  
362 has worked tirelessly to put in place a 1950s approach to  
363 energy that only an oil company could love and can best be  
364 summed up by the words dig, drill anytime, anywhere, even if  
365 it's in our coastal recreational waters.

366 Now, President Trump also made a foolish decision by  
367 announcing his intention to withdraw from the Paris Climate  
368 agreement. That was an agreement we spent years negotiating

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369 with the global community and was signed by, roughly, 200  
370 countries.

371 By abandoning our friend and allies, we have ceded our  
372 leadership on climate action and clean technology development  
373 and deployment to China, and others.

374 We were the global leader, but now we don't even have a  
375 seat at the table. What does that mean? That puts America  
376 last and is, tragically, shortsighted.

377 Republican "oil above all" policies have always centered  
378 on one thing -- putting the profits of oil tycoons and fossil  
379 industry donors first, and the current rerun of this cliched  
380 show should have been cancelled long ago. But, obviously, it  
381 isn't.

382 I don't know if anyone else would like my time. If not,  
383 I will yield back, Mr. Chairman.

384 Mr. Upton. I'd like to say the gentleman's time has  
385 expired but I'll be polite.

386 [Laughter.]

387 The gentleman yields back.

388 So we are ready for the testimony. I appreciate all of  
389 you sending up your testimony in advance. I was able to read  
390 it last night.

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391           It will be made part of the record in its entirety and  
392           you'll each have five minutes to summarize that testimony and  
393           expound how you might, and we will do questions.

394           And Dr. Yergin, you're first up.

395           Thank you. You got to hit that button to make sure that  
396           you're on.

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397 STATEMENTS OF DR. DANIEL YERGIN, VICE CHAIRMAN, IHS MARKET;  
398 DENNIS ARRIOLA, CHIEF STRATEGY OFFICER, SEMPRA; DR. KEVIN  
399 KENNEDY, DEPUTY DIRECTOR, U.S. CLIMATE INITIATIVE, WORLD  
400 RESOURCES INSTITUTE; HAROLD HAMM, CEO, CONTINENTAL RESOURCES;

401

402 STATEMENT OF DANIEL YERGIN

403 Mr. Yergin. Mr. Chairman, acting ranking member,  
404 members of the subcommittee, it's really an honor to be here  
405 and to have the chance to talk about this just dramatic  
406 change that's happened in the United States and what it means  
407 for our economy, for geopolitics, and the position of the  
408 United States in the world.

409 As the chairman pointed out and Mr. Walden pointed out,  
410 the World Gas Conference is here. It's 12,000 people from  
411 around the world who have come to Washington.

412 I have just come over from it. The theme of this  
413 conferences is fueling the future and now it's a very  
414 different future because of the shale revolution in the  
415 United States, and that has been one of the major themes.

416 This is, as was noted, the 10th anniversary, at least as  
417 we see it at IHS Market, of what we have called the shale  
418 gale, which was -- really changed the United States and the

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419 energy picture to have profound consequences, although I  
420 think the scale of the consequences would have been foreseen.

421 What's changed since 2008? Well, back in 2008, we were  
422 going to be the largest importer of LNG in the world. Now we  
423 are on the road to be one of the largest exporters and,  
424 indeed, as noted, the largest producer of natural gas in the  
425 world.

426 As many of you know, for four decades energy  
427 independence was the cry but we always were going in the  
428 other direction. The question only seemed to be how high  
429 would our imports go.

430 But now in a decade, we have gone from importing on a  
431 net basis 60 percent of our oil to 16 percent. Huge change.

432 Everyone knows that trade is a very big issue, so it's  
433 noteworthy to observe that over this decade the change in the  
434 U.S. oil position, along with changes in prices, has reduced  
435 the nation's annual trade deficit by \$300 billion.

436 U.S. oil production has more than doubled in the decade,  
437 and here's something striking. Next year, or maybe later  
438 this year, the United States will become the world's largest  
439 oil producer, ahead of Saudi Arabia and Russia.

440 It's been a major stimulus to the U.S. economy, not just

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441 in the oil and gas sector, but because across the entire  
442 economy because of long supply chains, and I would say in  
443 many states that -- where shale is not permitted there are  
444 jobs that have been created, we calculated 50,000 jobs in the  
445 state of New York because of the shale revolution.

446 Industries that were supposed to flee the United States  
447 because of high energy costs are now here in the United  
448 States, spending tens of billions of dollars.

449 Also, this is having major geopolitical impacts that are  
450 constructive for the United States. I can see it as I travel  
451 around the world how there is a whole new degree of influence  
452 that the United States has because of this revolution.

453 The turnaround in gas is just striking. The eight-year  
454 period of 2000-2007, total U.S. gas production grew by 1  
455 percent. Over the subsequent 10-year period it's grown by 40  
456 percent, and we believe that it will grow by another 60  
457 percent over the next 20 years.

458 So where would we be without this? Without the shale  
459 revolution, the United States would be importing large  
460 volumes of oil and gas. Our trade balance would be  
461 dramatically different.

462 Millions of jobs would not exist and the United States

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463 would be less competitive. The domestic U.S. power markets  
464 and the overall economy would look significantly different  
465 without the shale revolution.

466 Similarly, the outlook would be different in terms of  
467 the global economy and international relations both for  
468 countries that produce oil and gas and for countries that  
469 import them.

470 I just came from a meeting of APEC countries and the  
471 role of the U.S. in terms of LNG is something that is now  
472 very important to those Asian countries.

473 Certainly, without the shale gale we would be in a  
474 different position internationally. This has brought a new  
475 element of influence and independence for the United States.  
476 It was so evident this morning, and U.S. LNG exports are  
477 becoming a significant and positive factor in relations with  
478 many countries and a key issue in discussions about trade.

479 So this new outlook for oil and natural gas has created  
480 new possibilities for making progress towards national goals  
481 of energy efficiency, cost efficiency, environmental  
482 protection, global competitiveness, and energy security.

483 It is also contributing jobs and revenues to the economy  
484 at the national, state, and local levels. In short, the

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485 shale gale has put a powerful new wind at America's back.

486 Thank you.

487 [The prepared statement of Mr. Yergin follows:]

488

489 \*\*\*\*\*INSERT 3\*\*\*\*\*



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490

Mr. Upton. Thank you. Mr. Arriola.

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491 STATEMENT OF DENNIS ARRIOLA

492

493 Mr. Arriola. Mr. Chairman -- Chairman Upton, Acting  
494 Ranking Member McNerney, and members of the subcommittee,  
495 thank you for this opportunity to testify regarding U.S.  
496 natural gas policy and how it affects our business.

497 My name is Dennis Arriola and I am the chief strategy  
498 officer for Sempra Energy and I also have responsibility for  
499 our external affairs in our South American operations.

500 Sempra, as you mentioned, is a Fortune 500 services  
501 company based in San Diego, California, and we have  
502 approximately 20,000 employees that serve more than 40,000  
503 [sic] consumers around the world and we are the largest  
504 utility holding company with the largest U.S. customer base.

505 And our utilities include Southern California Gas  
506 Company, which is the largest natural gas distribution  
507 company in the United States, San Diego Gas and Electric, and  
508 Encore Electric Delivery Company in Texas.

509 And our energy infrastructure companies include our  
510 investments in Mexico that help import U.S. natural gas and  
511 petroleum products to that country and we have also have our  
512 Sempra LNG and Midstream business.

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513           And as Dr. Yergin mentioned, the timing of this hearing  
514           couldn't be better as the World Gas Conference is here in our  
515           nation's capital, and with the global triennial next stopping  
516           in the Republic of Korea and China, the conference this week  
517           in D.C. is the last time that the U.S. is going to have the  
518           opportunity to really help shape the discussion as the host  
519           country for years to come.

520           And I can tell you that the world truly is watching  
521           what's going on in Washington this week. The outlook for  
522           domestic and international natural gas markets has never been  
523           better because of two key developments, and one which Dr.  
524           Yergin mentioned -- the shale energy boom -- but also the  
525           opportunity to export U.S. liquefied natural gas, or LNG.

526           And we invest wisely and follow smart pro-market  
527           policies, there's little doubt that the U.S. will derive  
528           increased economic benefits, job growth, and even greater  
529           energy independence, and natural gas now serves as the  
530           leading fuel source for the industrial, commercial, and  
531           residential sectors of the U.S. economy.

532           And this increased consumption is providing for  
533           significant job growth, boosting the economy, and lowering  
534           air emissions, and natural gas is also ensuring greater

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535 energy security and prosperity globally as well.

536 Now, we own two and operate two LNG facilities and we  
537 are in the process of permitting a third. Our Cameron LNG is  
538 in Louisiana -- is under construction. We currently have  
539 10,000 workers on site and when it's completed and starts  
540 operating in 2019, the facility is going to create  
541 approximately 130 well-paying jobs in an area that really  
542 will benefit from them.

543 We are also pursuing our FERC permit for an LNG export  
544 facility located near Port Arthur, Texas, and again, this is  
545 going to be employing over 3,100 construction and engineering  
546 jobs and, on average over the four- to five-year period of  
547 build out it's going to create more than 200 permanent well-  
548 paying jobs.

549 Both of these projects together could help reduce our  
550 overall trade deficit by, roughly, \$16 billion annually, and  
551 these and other export facilities are going to promote new  
552 pipelines and maintain natural gas production for many states  
553 that are represented here on the subcommittee, including  
554 Ohio, Pennsylvania, New Mexico, Texas, and Louisiana, and  
555 it's also going to help continue the current cost advantage  
556 that benefits U.S. consumers.

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557           Now, we have the potential to strengthen alliances with  
558           developed and developing countries by providing a safe and  
559           reliable resource to those countries.

560           But we've got to be able to build the infrastructure in  
561           this country to do that, and the U.S. gas exports can also  
562           help our European and Asian allies reduce their energy  
563           dependence on Russia.

564           And if we are to benefit from this opportunity, we've  
565           got to take advantage of it and the time is now, and one of  
566           the things that we were looking for from this subcommittee is  
567           to, along with the administration, figure out how we can  
568           expedite in a smart manner the permitting processes that are  
569           required here in this country to have that infrastructure, to  
570           help export good clean natural gas from the United States.

571           These delays jeopardize commercial agreements with our  
572           international trading partners and you can be sure that the  
573           other major LNG-exporting countries are doing everything  
574           possible to enhance their competitive position, and  
575           bureaucratic delays are not one of the challenges they have.

576           So I think we need to work together as a country to take  
577           advantage of this window of opportunity to make sure that  
578           when you enter into these contracts these are 20- to 30-year

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579 contracts.

580           If we, as an American business community, can't get in  
581 on time with these countries, we are going to get shut out  
582 and we are not just shut out for a year -- we are shut out  
583 for decades, and that means that the jobs that can be helping  
584 certain parts of our country, the economic progress won't  
585 come about.

586           And so what we need is to ensure that FERC maintains its  
587 typical permit review schedule of no more than 18 to 24  
588 months so that we can get this going.

589           Thank you.

590           [The prepared statement of Mr. Arriola follows:]

591 \*\*\*\*\*INSERT 4\*\*\*\*\*

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592

Mr. Upton. Thank you. Dr. Kennedy.

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593 STATEMENT OF KEVIN KENNEDY

594

595 Mr. Kennedy. Thank you, Chairman Upton, Mr. McNerney,  
596 other members of the committee. I am very pleased to be  
597 joining you here today for this hearing.

598 My name is Kevin Kennedy and I am deputy director for  
599 the U.S. Climate Initiative at the World Resources Institute.  
600 WRI is a global research organization that turns big ideas  
601 into action at the intersection of the environment, economic  
602 opportunity, and human wellbeing.

603 As Mr. McNerney noted, as we look at the energy  
604 landscape in the United States today, it's important not just  
605 to focus on the oil and gas industry but to consider the  
606 broader context of changes that are happening across the  
607 country.

608 America has seen significant progress on the development  
609 and deployment of clean energy such as renewables, resulting  
610 in large part from the leadership of states, cities, and  
611 businesses, often acting with the support and cooperation of  
612 the federal government.

613 When President Trump announced last year his intent to  
614 withdraw from the international climate agreement, some

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615       feared that this progress might slow.

616               On the contrary, that announcement catalysed continued  
617       and expanded commitment from states, cities, and businesses  
618       across the country.

619               Within days, over 1,200 leaders joined together to say  
620       we are still in and committed to support climate action, and  
621       as of this weekend, that declaration has been supported by  
622       over 2,800 leaders.

623               I have been a core member of the research team behind  
624       the America's Pledge Initiative, which was launched last July  
625       by former Mayor Michael Bloomberg and Governor Jerry Brown,  
626       to document the full range of climate and clean energy  
627       actions being taken across America.

628               Our report last November showed that leaders  
629       representing almost half the population and more than half of  
630       the U.S. economy have committed to bringing down their  
631       greenhouse gas emissions.

632               These leaders recognized that acting to support clean  
633       energy and address climate change can go hand in hand with  
634       economic growth and job creation.

635               While many of those signing declarations like we are  
636       still in are doing so for environmental reasons. Others are

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637 acting based primarily on the economic opportunities offered  
638 by being leaders in clean energy.

639 They recognize that major countries around the world are  
640 investing in renewables and other clean energy sources and  
641 the global markets are shifting fast, and they want to see  
642 their communities and the country lead rather than to follow.

643 This committee and Congress can be their partners in  
644 moving ahead on renewables, energy efficiency, and other  
645 clean energy sources. I want to share just a few of the  
646 stories today.

647 In 2017, large corporate buyers in the U.S. like Google,  
648 Kimberly-Clark, and General Motors, announced contracts for  
649 nearly 2.9 gigawatts of renewable energy -- an 80 percent  
650 increase from the previous year, and this year they've  
651 already announced deals for almost 2.5 gigawatts -- almost  
652 matching last year's total just six months in.

653 The Republican mayor of Georgetown, Texas, said one of  
654 the most important benefits of being 100 percent renewable is  
655 the potential for economic development. Many companies are  
656 looking to increase their green sources of power for both  
657 office and manufacturing facilities.

658 Mayor Ross added that the city's move to 100 percent

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659 renewables was chiefly a business decision based on cost and  
660 price stability.

661 Looking to energy efficiency, the private sector has,  
662 again, been a leader. Almost 200 U.S. manufacturers have  
663 committed to decreasing their energy intensity by 25 percent  
664 over 10 years as part of the Department of Energy's Better  
665 Plants program.

666 These companies have already saved -- already reported  
667 \$3.1 billion in reduced energy costs. We also see meaningful  
668 moves in the auto industry. Ford plans to nearly double its  
669 investment in electric vehicles in the next five years and GM  
670 is working towards an all-electric zero tailpipe emissions  
671 future with 20 new electric vehicle models to be available  
672 globally in the early 2020s.

673 The NEF projects that by 2040, 55 percent of new global  
674 car sales will be electric. Those states that have put a  
675 price on carbon have also seen both environmental and  
676 economic benefits.

677 The Regional Greenhouse Gas Initiative, known as RGGI,  
678 prices carbon dioxide emissions from the electric sector,  
679 serving nine states from Maryland to Maine. RGGI states have  
680 outperformed the rest of the country both environmentally and

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681 economically.

682           During its first five years, emissions decreased 35  
683 percent in RGGI states but only 12 percent elsewhere. At the  
684 same time, RGGI state economies grew faster than the rest of  
685 the country.

686           These are just a few of the good news stories about  
687 state, local, and private sector movement towards renewables  
688 and other forms of clean energy.

689           The degree of momentum behind this transformation and  
690 the resulting economic benefits to local communities across  
691 the country would be enhanced by federal support for  
692 development and deployment of clean energy resources like  
693 renewables and energy efficiency.

694           As other countries invest in clean energy, it's time for  
695 this Congress and the administration to step up support for  
696 states, cities, and businesses that are looking to seize the  
697 economic opportunities presented by clean energy  
698 transformation.

699           Thank you for your time.

700           [The prepared statement of Mr. Kennedy follows:]

701

702 \*\*\*\*\*INSERT 5\*\*\*\*\*

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703

Mr. Upton. Mr. Hamm, welcome.

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704 STATEMENT OF HAROLD HAMM

705

706 Mr. Hamm. Thank you, Chairman Upton, Acting Ranking  
707 Member McNerney, and other members of the committee.

708 My name is Harold Hamm. It's my honor to address you  
709 today on the miracle of American oil and gas and its global  
710 impact.

711 As chairman of the Domestic Energy Producers Alliance  
712 and CEO of the company that co-developed the first oil field  
713 ever drilled exclusively with horizontal and a company that  
714 is the largest leaseholder and most active driller and  
715 largest producer both in the Bakken play in North Dakota and  
716 the SCOOP/STACK and Springer plays of Oklahoma, I've been  
717 able to pioneer and participate in the American energy  
718 renaissance first hand.

719 I testified to the House Agricultural Committee on July  
720 8th, 2015, about the American energy renaissance and,  
721 particularly, we was asking for lifting of the ban on  
722 exportation of crude oil, and it was granted. We got it  
723 signed into law. President Obama signed it into law and I  
724 appreciated that.

725 Of course, we have to remember back. It was on the

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726 omnibus bill -- it's a little bit hard not to sign -- and a  
727 two-year extension was given to wind and solar at that time  
728 and, of course, two years times 10. It was a very costly  
729 addition -- the cost renewals.

730 I said it then and I will say it again -- the American  
731 energy renaissance is the single-most defining aspect on this  
732 planet today that will shape the next 50 years ahead of us.

733 In the past 10 years, the United States has undergone  
734 unprecedented transformation, as Daniel said, and thanks to  
735 the ingenuity of America's independent oil and gas natural  
736 producers -- oil and natural gas producers we are  
737 transitioning from a consuming short supply nation to an  
738 energy long supplier dominating the world oil market today.

739 Our country has rapidly gone from fears of energy  
740 scarcity to understand that U.S. energy independence is well  
741 within our reach. I think that will happen late 2020. We  
742 are a little ahead of the IEA on that, and during this Trump  
743 administration we'll become not only energy dominant but  
744 we'll become energy sufficient and independent in the future.

745 And so we have had to rely on other countries to fuel  
746 our energy needs drastically in the past, primarily from the  
747 Middle East.

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748           The instability of shifting alliances wreaked havoc on  
749           American foreign policy for decades, and that's been  
750           complicated by Russia and their involvement as well in the  
751           country's global affairs.

752           But the American energy renaissance is rapidly shaping  
753           those complicated dynamics to align with the U.S. to produce  
754           all the energy that it needs.

755           Our energy imports have dropped from over 30 percent of  
756           energy consumed in 2007 to less than 8 percent currently, and  
757           because of these production gains, the U.S. no longer has to  
758           put American lives in the Middle East particularly.

759           The ban on exports of crude oil was lifted in 2015 -- we  
760           talked about that -- and we are now on pace to become a net  
761           energy exporter and provide our allies with a reliable  
762           affordable supply of vital commodities like oil, LNG, and  
763           other petroleum products, and we can also impact the world  
764           with these clean fuels.

765           Rising U.S. oil production has have proven to be vital  
766           in meeting global demand as production capacity -- while  
767           eliminating dramatic price hikes have long been a hallmark of  
768           global markets.

769           Total petroleum exports are now averaging close to 7

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770 million barrels a day, roughly, 2 million of which is crude  
771 oil.

772 The commitment of the Trump administration to repealing  
773 unnecessary and in many cases archaic and onerous regulations  
774 is the right move for America.

775 There are still a couple around the CAFÉ standards that  
776 was approved back when everybody thought we was running out  
777 of oil. Certainly, it is wreaking havoc with the -- on the  
778 highways today and claim an additional 10,000 lives per year  
779 due to the small size imposed by CAFÉ standards on vehicles.

780 Also, the archaic SCC rules need to be changed that  
781 limit our production and booking just to five years. If we  
782 are to be energy dominant, we certainly need to recognize  
783 that.

784 And we've done it environmentally sound, no governmental  
785 assistance or subsidies. It's all come from the independent  
786 sector.

787 Thank you.

788 [The prepared statement of Mr. Hamm follows:]

789

790 \*\*\*\*\*INSERT 6\*\*\*\*\*

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791           Mr. Upton. Thank you all, and I -- you know, I remember  
792 coming to Washington as a young staff -- I am still young --  
793 and I remember the gas lines.

794           I remember having a 1 at the end of my license plate  
795 which allowed me to fill up, after an hour and a half, at a  
796 Shell station around the corner here on Capitol Hill.

797           And, Mr. Arriola, I don't know how you did it but you  
798 got one of the sharpest people in your organization in the  
799 woman behind you, Maryam Brown.

800           She was one that worked hard with our Energy and  
801 Commerce staff to actually develop the strategy that, I got  
802 to tell you, was bipartisan -- the North American Energy  
803 Independent Plan -- and laid it out.

804           We had testimony from Dr. Yergin back then, who  
805 predicted that we could do this if you unshackle the  
806 industry, and I got to tell you, nine years ago, the day that  
807 President Obama was sworn in the gas price -- average gas  
808 price, and that was before Memorial Day and before July 4th,  
809 was \$3.84 a gallon, and it hurt a lot of people, particularly  
810 the most vulnerable.

811           And as I recall, that summer gas prices got pretty close  
812 to \$5.00 and even over -- in some areas like California even

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813 maybe \$6.00 a gallon.

814 This last weekend, I was home in Michigan. I watched  
815 gas prices at \$2.65. So forget inflation. I mean, it is so  
816 -- we are so much better off, and the strategy that we laid  
817 out, which, again, was bipartisan.

818 Mr. Hamm talked about it. President Obama signed it  
819 into law to lift the crude oil and there were still some,  
820 even from Texas, who voted against the omnibus, even though  
821 that was part of it, despite Mr. Barton's pleading, and he  
822 did a great job in lining up the support to get that done.

823 But where would we be today without this? And I guess  
824 the other quick question that I have for Mr. Yergin, you said  
825 in your testimony that we anticipate that U.S. production  
826 could grow by another 60 percent over the next 20 years.

827 You know, I talk to my farmers who use natural gas to  
828 dry their corn. You know, most of my constituents -- many of  
829 them, anyway -- have natural gas for heating and cooling and  
830 so those rates have gone down. They're not even a third of  
831 what they were 10, 15 years ago.

832 Where are we headed with this continued new production  
833 that in fact not only can we export and so help our balance  
834 of trade, but what is that going to do for the average family

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835 across the country?

836 Mr. Yergin. What it's meant is lower cost for  
837 electricity, lower cost for heating, and it's also, because  
838 of the impact on this economy, I mentioned in my written  
839 testimony we've added about \$120 billion of new investment  
840 directly in manufacturing, about maybe a same amount as  
841 ancillary.

842 So it's created a lot of jobs. It's really been  
843 beneficial across the board.

844 Mr. Upton. And it's done a lot for the climate as well.  
845 I mean, we know that emissions -- CO2 emissions -- have  
846 dropped by 30 percent. I think half of that is just by the  
847 transformation to coal -- from coal, I should say.

848 Mr. Yergin. Well, I mean -- yes, if you look at it, our  
849 emissions today are back to the level of the early 1990s  
850 although our economy has almost doubled since that time and  
851 gas has been an important part of that.

852 Mr. Upton. Mr. Hamm, you indicated in your testimony  
853 that U.S. has the lowest gas and diesel prices in the  
854 developed world. What are the biggest drivers of reducing  
855 those prices and what can we do to continue to keep those  
856 prices low?

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857           Mr. Hamm. A lot of it has to do with the product that's  
858           produced. Just like the Bakken -- you know, that's -- that  
859           oil has no bottoms to speak of, no asphalt.

860           Basically, a lot of middle distillates, which is  
861           gasoline, diesel, kerosene, and when that -- you know, prior  
862           to it coming into existence back in 2007, you saw diesel  
863           prices at \$4.00, \$4.50 a gallon, and that was because there  
864           wasn't much you could wring out of a barrel of bitumen coming  
865           in from Canada.

866           But with the addition of all this oil coming in in the  
867           Bakken, that price went to \$2.25 and it did it very quickly.  
868           And so as a result, we see both diesel and gasoline prices  
869           the cheapest that you have seen.

870           And so we have the lowest gasoline prices in the world  
871           that we are enjoying and this is with some state taxes on it,  
872           and some of them, like, California, get pretty high.

873           Mr. Upton. So in my remaining 15 seconds, if the oil  
874           price stays about the same -- where it is today -- is that  
875           going to continue to see the exploration and the drilling and  
876           the production of domestic resources versus going too low and  
877           maybe shutting those off?

878           Mr. Hamm. You know, we have a great supply. You know,

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879 I think we are all -- I am a geologist -- looking forward  
880 with natural gas.

881 I think we've got a 100-year supply or more. You know,  
882 I think we can produce 10 million barrels a day of crude oil  
883 for the next 85 years. You know, again this is an entirely  
884 new reservoir to explore.

885 Basically, what we've done in the past is explored what  
886 leaked off of these giant shale fields where the oil was  
887 generated. And so all we could do is maybe that 15 percent  
888 that leaked off into upper reservoir traps we could go after  
889 that.

890 Today, we can go into those resource beds like the  
891 Woodford and the Bakken and produce the oil left in them. So  
892 there's about 85 percent available. What can we get of that  
893 -- 20, 25, 30 percent? Sure.

894 Mr. Upton. My time has expired. Mr. McNerney.

895 Mr. McNerney. Thank you, Mr. Chairman. Your time has  
896 more than expired.

897 Excellent presentations. I really appreciate all of  
898 your words. Dr. Yergin, the financial disclosure of climate  
899 effects for oil companies -- is that possible to make that  
900 happen? What would it -- how would it affect the economy?

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901           How would it affect the companies and how can we get  
902           that information to shareholders if they're not going to be  
903           able to produce that information?

904           Mr. Yergin. I think a lot of that is being produced  
905           now. Companies are preparing their financial disclosure  
906           reports, their sustainability reports.

907           The question is does it go in the financial reports,  
908           does it go in others, and I think there's a process going on  
909           with the climate-related financial disclosures to get the  
910           right framework for meaningful information that's meaningful  
911           for investors. So I think we have pointed to something  
912           that's in process and being developed.

913           Mr. McNerney. Thank you. Do you -- in my opening  
914           statement, I mentioned the cyclical nature of the oil  
915           business economically. Do you see that happening now or do  
916           you think because of the shale revolution that it's going to  
917           flatten out a little bit?

918           Mr. Yergin. No, I think -- I think you hit it on the  
919           nail. It's a cyclical business. It's always been a cyclical  
920           business and if you look at the oil market today you see that  
921           we've gone from that really big surplus that led to the  
922           collapse with a tightening market and you have some very

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923 important geopolitical things that are happening.

924 One is the rapid decline and collapse in Venezuela in  
925 oil production, which is something that we can feel the  
926 impact of in the next several months.

927 Just to give you the numbers, Venezuela was 22 million  
928 barrels three years ago. Today, it's 1.4. We think next  
929 year it'll be at 800,000 and could be lower than that.

930 And the other thing that's, obviously, with the  
931 sanctions coming on Iran, it's -- with a very different  
932 pacing by this administration and the Obama administration,  
933 right now there's uncertainty about that.

934 So I think, you know, whenever they say cycles have been  
935 abolished I tend to think no.

936 Mr. McNerney. Thank you. You know, I believe one of  
937 the big drivers to the shale revolution was the way that  
938 ownership of the minerals below the surface as handled in  
939 this country as compared to other countries.

940 Are other countries going to be able to carry on this --  
941 pick up the shale revolution or is that going to be  
942 continuing to be driven in this country?

943 Mr. Yergin. Well, it's in Canada, but the kind of early  
944 thoughts that it was going to spread rapidly around the world

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945 has not borne out, partly for geological reasons, partly for  
946 political reasons, and partly for the reason you point to --  
947 that the resources under the grounds are owned by  
948 governments, not by the farmers who work on them.

949 I would say the area now that there's the greatest  
950 optimism about is what's called the Vaca Muerta, which means  
951 dead cow, which is an area of Argentina and that's where the  
952 focus is.

953 But so far, this is really a North American deal.

954 Mr. McNerney. How about geopolitical leverage of our  
955 oil export and natural gas export versus what's happening as  
956 a result of us pulling out of Paris and sort of repercussions  
957 of us pulling back with regard to being a leader on climate  
958 change?

959 Mr. Yergin. I think there are kind of two separate  
960 things. Obviously, Dr. Kennedy has described the latter.

961 But I am very struck when I go to a country like India  
962 to see that, to them, it's very significant that there's this  
963 whole new dimension to their relationship with the United  
964 States that we are exporting gas to them.

965 We are actually exporting oil to them and it gives a  
966 whole new strand to that relationship and a kind of dialogue

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967 that wasn't there before, and I see that in many countries  
968 around the world.

969 And I think that the -- you know, I don't know where we  
970 are on trade right now but, certainly, LNG exports to China  
971 were seen as one factor that changed the trade balance  
972 between our two countries.

973 Mr. McNerney. Thank you. Dr. Kennedy, could you give  
974 me some indication of the job creation per kilowatt hour  
975 equivalent of renewables versus oil and natural gas?

976 Mr. Kennedy. I don't have those numbers off the top of  
977 my head. But I would be happy to sort of go back to the  
978 office and gather some of that information and provide it to  
979 you, yes.

980 Mr. McNerney. Okay.

981 Mr. Arriola, I am concerned about Sempra's design of  
982 selling off its renewables. Can you give me some clue where  
983 Sempra is with regard to that process?

984 Mr. Arriola. I think what you're probably referring to,  
985 Congressman, is a shareholder proposal that we received in  
986 the last couple weeks from an investor group, and what I can  
987 tell is Sempra is totally dedicated and committed to  
988 continuing our focus with renewables.

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989           In fact, if you look at -- and you know our company, San  
990           Diego Gas and Electric, it's actually one of the leading  
991           companies that procures renewable power on behalf of our  
992           customers.

993           In fact, last year over 45 percent of the power that we  
994           procured was renewables and we are continuing to focus on  
995           what we can do from the battery storage technology standpoint  
996           in looking at electric vehicles.

997           So Sempra, at its core, is focused on sustainability and  
998           part of that is renewable energy as well.

999           Mr. McNerney. Okay. Thank you. Yield back.

1000           Mr. Olson. [Presiding.] The chair now calls upon the  
1001           gentleman from Texas, the vice chairman of the full  
1002           committee, Mr. Barton, for five minutes.

1003           Mr. Barton. I thank the gentleman from Fort Bend  
1004           County, Texas, and I can't tell you how excited I am to have  
1005           this hearing. It's really exciting for me.

1006           I've got all kinds of questions but I am going to --  
1007           since I only have five minutes I am going to try to be as  
1008           quick as possible.

1009           Mr. Yergin -- and this would be also for Mr. Hamm --  
1010           what's -- with current technology and current resource base,

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1011 what's the upper limit for oil production per day in the  
1012 United States as compared to Saudi Arabia and Russia?

1013 Mr. Yergin. Well, as a famous wildcatter in Texas said  
1014 about around 1900, on Dr. Drill knows for sure. But I think  
1015 now an informed view, and I think we see it from even the  
1016 Energy Information Administration and others, the U.S. today  
1017 is a little short of 11 million barrels a day.

1018 It could be 14 or 15 million barrels a day. Russia is  
1019 around 11 million. Saudi is, like, 10.3. So we are moving  
1020 into this position very significant and, you know, you take  
1021 the Permian in Texas, which Mr. Hamm referred to.

1022 Eight years ago, it was 900,000 barrels a day. It's  
1023 2.5. We think another five years the Permian alone will be  
1024 5.4 million barrels a day, which will make it larger than any  
1025 country in OPEC except for Saudi Arabia.

1026 Mr. Barton. Mr. Hamm.

1027 Mr. Hamm. I don't have any change to that. Daniel is  
1028 right on. You know, this year, best guess that we are going  
1029 to grow about 900,000 barrels per day in the U.S.

1030 So, you know, there's some infrastructure things out  
1031 there that, you know, will cap some of that -- that growth.  
1032 But, you know, I don't see that number changing for a while.

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1033 Mr. Barton. Is there any other country in the world  
1034 that has a higher delta potential production increase than  
1035 the United States?

1036 Mr. Yergin. Well, I will say that --

1037 Mr. Barton. I hope the answer is no.

1038 Mr. Yergin. The answer is no. I don't think anywhere  
1039 in the world has actually seen the kind of growth that we've  
1040 seen in the United States in the last five or six years. It  
1041 just doesn't happen anywhere else in the world. It's  
1042 breathtaking.

1043 Mr. Barton. What is China's potential oil and gas  
1044 production as a percent of its demand? Do they have the  
1045 ability to produce what they consume in oil and gas or will  
1046 they -- will they be a net importer of --

1047 Mr. Yergin. No, they're going in just the opposite  
1048 direction we are. They are now importing 75 percent of their  
1049 oil and I think IEA has just said next year they're going to  
1050 be the largest importer of natural gas, which has become a  
1051 real imperative for them.

1052 So they're becoming more deponent and, you know, it's  
1053 striking to see that part of their portfolio now is from the  
1054 United States.

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1055 Mr. Barton. This next question is for Mr. Arriola,  
1056 since you're with Sempa. What's the 10-year outlook for LNG  
1057 prices on the world market? I would assume they're going to  
1058 come down as we ramp up our exports?

1059 Mr. Arriola. No, I think -- Congressman, I think you're  
1060 correct. I think what we are finding is that as demand  
1061 externally continues to increase, there's more production  
1062 going on here domestically and it's helping to actually keep  
1063 prices relatively flat or actually continuing to push them  
1064 down, and as we see additional advances in technology I think  
1065 it's really good for consumers long term.

1066 So what we are seeing in why countries on the outside  
1067 are looking to buy U.S. natural gas is because of the  
1068 stability of those prices.

1069 Mr. Barton. My assumption -- of course, I am not in the  
1070 market like you are, but my assumption is that as we ramp up  
1071 our export terminal capability and capacity that those prices  
1072 are going to come down, but they're going to level out, I  
1073 hope, about halfway from where they were a couple years ago  
1074 and where our domestic price is.

1075 So if we can get it \$7, \$8 in MCF equivalent, I think --  
1076 I hope it's somewhere in that range. Can U.S. exports be

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1077       profitable in that price range?

1078               Mr. Arriola. What we are seeing from the market is that  
1079       the demand is there, and Mr. Hamm knows probably better than  
1080       anyone that the U.S. production market is continuing to look  
1081       for more natural gas and oil, which they wouldn't be doing it  
1082       if it weren't profitable.

1083               Mr. Barton. This is my last question and I am going to  
1084       sort of pat myself on the back here. You know, I helped lead  
1085       the fight, and a lot of members on the committee did, to  
1086       repeal the ban on crude oil exports three or four years ago,  
1087       and this committee also led the effort to make it possible to  
1088       permit LNG terminals in a more timely fashion.

1089               What's the geopolitical significance of those two  
1090       congressional actions?

1091               Mr. Yergin. I think the geopolitical position is  
1092       strengthening the United States and strengthening our  
1093       position in the world.

1094               I mean, it really gives us a whole new vocabulary to  
1095       talk to countries about and the degree and a whole new  
1096       category of kind of respect and a deeper relationship. So  
1097       it's been proved to be, I think, very positive.

1098               Mr. Arriola. Congressman, what I would say to that is

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1099 we talk to customers outside of the United States. They're  
1100 looking for options. They're looking for options away from  
1101 Russia and other countries and they want the United States to  
1102 be one of those options.

1103 Mr. Yergin. If I could say one other thing -- it also -  
1104 - there's a lot of contention in the relationship with China  
1105 right now.

1106 But this has taken one issue of contention off the  
1107 table, because if you go back eight, 10 years, there would  
1108 still have to be this zero sum game between China and the  
1109 United States for energy. That's completely gone, and I  
1110 think that's something that improves our position.

1111 Mr. Barton. Thank you, Mr. Chairman.

1112 Mr. Olson. Pat on the back complete. The chair now  
1113 calls upon Mr. Peters from California for five minutes.

1114 Mr. Peters. Thank you, Mr. Chairman. I thank the  
1115 witnesses for being here. I will say hello to Mr. Arriola  
1116 from San Diego, and congratulations on the SDG&E being at 45  
1117 percent.

1118 I say it's the highest, the most renewable. If you know  
1119 of a utility that's doing better you should -- unless you  
1120 know that, you should say it's the highest, not one of the

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1121 highest.

1122 Mr. Arriola. We'll do that in the future. Thank you.

1123 Mr. Peters. Okay. Thanks. Not that you're running for  
1124 office.

1125 You referred to clean natural gas in your testimony. I  
1126 think that implicit in that is the statement that natural gas  
1127 burns cleaner than coal and I think most people would concede  
1128 that.

1129 The thing that a lot of folks say, though, is that a lot  
1130 of the benefit of natural gas is lost because of fugitive  
1131 methane emissions -- that methane being a much more damaging  
1132 agent to climate even than carbon dioxide in the short run.

1133 The flip side of that is if you could contain it -- if  
1134 you could -- if you could keep methane from escaping you  
1135 could have a good impact on the rate of climate change.

1136 Let me ask you kind of how do you think the United  
1137 States is doing in terms of methane capture? And I would  
1138 like you to address that -- I am going to ask the same  
1139 questions of Mr. Kennedy.

1140 Mr. Arriola. You know, it's a great question,  
1141 Congressman, because I think with all of the advancements in  
1142 technology and all of the capital expenditures that we've had

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1143 within our industries over the -- I would say over the last  
1144 10 years, we have been able to identify and remediate  
1145 substantially a lot of the methane emissions that come from  
1146 the natural gas supply chain.

1147 And so when you compare the United States -- and this is  
1148 based upon numbers that were coming out of the EPA, the  
1149 United States is probably one of the lowest when you look at  
1150 the overall supply chain -- probably close to 1 2 percent is  
1151 the number that I've seen.

1152 What I would tell you is that there are additional  
1153 opportunities for us to be able to capture methane emissions  
1154 that don't necessarily come from the natural gas supply chain  
1155 but, rather, from the agricultural industry, the water supply  
1156 industry, landfills, and within our company we are actually  
1157 looking at new technologies to try to gather this and really  
1158 create renewable natural gas by using it for either  
1159 transportation fuels and/or reinjecting it into our  
1160 pipelines.

1161 So I think there's more opportunities there and we are  
1162 focused on those.

1163 Mr. Peters. Just in terms of natural gas collection and  
1164 distribution, it's my concern that the market may not provide

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1165 sufficient incentives to look after that.

1166 Mr. Kennedy, what do you -- what would you tell me about  
1167 methane capture?

1168 Mr. Kennedy. Thank you, Congressman. I would agree  
1169 that both -- that there are many of the technologies that are  
1170 available and can be used to help contain and capture the  
1171 methane leakage from the oil and gas industry but they are  
1172 often not being used to the degree that they should be.

1173 In a recent report just last week, some academic studies  
1174 looking at the degree of methane leakage across the oil and  
1175 gas industry are suggesting that it is much greater than EPA  
1176 had been estimating.

1177 I have not had a chance to look in any depth at that  
1178 study but am greatly concerned that that is an indication  
1179 that while CO2 emissions are down because of the advantages  
1180 on the combustion side between natural gas and coal that the  
1181 methane leakage may in fact be using up much of that  
1182 advantage or even all of that advantage.

1183 I would also agree that there's opportunities for  
1184 renewable natural gas from other sources. We have done some  
1185 recent work on that. So there's other opportunities to  
1186 capture other methane.

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1187           But the oil and gas industry has the ability, but needs  
1188           a lot of attention to make sure that they really capture  
1189           methane as they could.

1190           Mr. Peters. I would just say I would like to follow up  
1191           with both of you or all of you about what we could do on  
1192           that. I was invited to attend a conference held by Harvard  
1193           Business School on America's unconventional energy  
1194           opportunity, they called it.

1195           It was in -- it was in March of 2015 -- where they  
1196           assessed that the cost of actually controlling this was very  
1197           small in relation to the revenues and the profits.

1198           But I don't -- it just strikes me that we should come up  
1199           with some regulatory regime because this is classic market  
1200           failure, I believe, when the cost of capturing that few --  
1201           that little bit of methane gas may not be sufficient to  
1202           induce someone to keep it from escaping and I think -- I  
1203           think, frankly, Sempra's been pretty open to that and I look  
1204           forward to working with you.

1205           Mr. Chairman, I yield back.

1206           Mr. Olson. Thank you. The chair now calls upon Mr.  
1207           Shimkus from Illinois for five minutes, sir.

1208           Mr. Shimkus. Thank you, Mr. Chairman, and my

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1209 colleague's line of questioning -- from California.

1210 I do want to make a point on the renewable natural gas  
1211 that in the RFS in the advanced bucket there are credits for  
1212 renewable natural gas.

1213 That's actually a growing part of the advanced bucket of  
1214 the RFS. So we should visit on that as we go down this  
1215 route.

1216 A question I have -- I am going to focus on the refined  
1217 products and exports for a minute and I would like to ask Dr.  
1218 Yergin and Mr. Hamm what countries outside of North America  
1219 do we ship refined products too?

1220 Mr. Yergin. Well, I don't have all of them in my head  
1221 by any means. I know Latin America is a big source,  
1222 sometimes Europe, perhaps even Asia.

1223 I think in terms of LNG exports, I think so far we've  
1224 exported LNG to about 26 different countries.

1225 Mr. Shimkus. Mr. Hamm.

1226 Mr. Hamm. Yes. You know, the refineries in this  
1227 country, 30 percent of it is owned by foreign governments and  
1228 entities and they can ship wherever they want.

1229 They, basically, own those refineries. Much of it was  
1230 built for their own oil, like the Canadians, Venezuelans,

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1231 PEMEX. And so that oil, basically, is coming through,  
1232 refined here and where it goes is any customer that they have  
1233 around the world.

1234 And so about 5 million barrels a day is refined products  
1235 that go to those customers wherever.

1236 Mr. Shimkus. Can anyone talk to me the difference  
1237 between the, in essence, the refined product on the gasoline  
1238 side for octane ratings the difference between the United  
1239 States and the European market, and is there one? Does  
1240 anyone know that?

1241 We've been working on it. Bill Flores and I are -- we  
1242 are focusing on trying to revise the renewable fuel standard.  
1243 As many of you people know, there is a push on looking at  
1244 octane, and then the basic argument is this -- why not get  
1245 our smartest petroleum engineers and our smartest engine  
1246 engineers to work together to figure out what's the best  
1247 product. It addresses maybe a CAFE issue. It might address  
1248 a little carbon issue.

1249 So in our research we found out that in the United  
1250 States our regular is 91 to 92 real octane number. The  
1251 European gasoline is at a 95 real octane number.

1252 So the question would be do you see any benefits of a

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1253 kind of a unified octane standard in just markets as far as  
1254 exporting refined product to the European market if we had  
1255 the same octane standard as they would have?

1256 My guess is that would be beneficial, just through  
1257 simplicity of markets and commodity product. Is that  
1258 farfetched?

1259 Dr. Yergin.

1260 Mr. Yergin. This is new to me. I feel I need to go  
1261 back and ask my refinery -- my colleagues who work in  
1262 refining that question and focus on it. I would be happy to  
1263 --

1264 Mr. Shimkus. Yes, I think -- well, we are putting a lot  
1265 of time to it and I would appreciate any smart people looking  
1266 at this.

1267 We are trying to address this -- obviously, the White  
1268 House is and the secretary of ag and the secretary of energy  
1269 and the EPA administrator.

1270 The industry is being whipsawed back and forth with  
1271 different proposals and I think that's what happened when you  
1272 don't have a legislative fix and a legislative schedule and  
1273 agenda. So we have a lot of different stakeholders.

1274 The last thing for -- part of this is, and I direct this

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1275 to you, Mr. Hamm, because we do talk about CAFÉ standards,  
1276 and without a change in the fuel mix, as we are predicting,  
1277 the way to reach CAFE standards is to have smaller lighter  
1278 vehicles, which might address, one, safety issues for some,  
1279 and then in rural America, a total rejection of -- because we  
1280 like big trucks, big engines, big power aspects.

1281 Do you -- if -- in this issue of -- do you see a -- do  
1282 you see a benefit in the aspect of CAFE if you have high-  
1283 compression engines that can go further on the same amount of  
1284 gas, as far as meeting CAFE standards?

1285 Mr. Hamm. You can only go so far with that technology  
1286 and manufacturers have done what they could with high-  
1287 compression engines and fuel injection and everything that  
1288 goes along with that, and what it came down to was the shadow  
1289 of a car gets smaller and smaller and smaller, and it's  
1290 rejected by the buyers in America.

1291 So pretty soon everybody's buying SUVs. Everybody is  
1292 buying pickup trucks or they're buying these little cars if  
1293 that's all they can afford and putting their families in it.

1294 But what we've seen is that we've reduced -- we've  
1295 reduced with seatbelts and airbags and everything else safety  
1296 fatalities from 45,000 down to about 30,000, and that was the

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1297 bottom, and now it's crept up due to the small size of these  
1298 cars back up to 40,000.

1299 So it's killing 10,000 Americans per year, and we have -  
1300 - that's the number of them because you have got a huge mix  
1301 of bigger vehicles out there with these little cars. And  
1302 they're made out of aluminum -- they crush up like a beer  
1303 can, kill everybody inside.

1304 Mr. Shimkus. Yield back. Thank you, Mr. Chairman.

1305 Mr. Upton. [Presiding.] Mr. Tonko.

1306 Mr. Tonko. Thank you, Mr. Chair. Earlier this month,  
1307 Pope Francis met with some of the world's largest oil and gas  
1308 companies to urge them to take the threat of climate change  
1309 more seriously.

1310 But the consequences of climate change are not just  
1311 moral or environmental-based. Any of the world's largest  
1312 investors say it is an economic concern as well.

1313 Mark Carney, the governor of the Bank of England and  
1314 chair of the G-20's Financial Stability Board, has made it  
1315 clear that businesses should be assessing and disclosing  
1316 climate related risks.

1317 A 2016 Black Rock Investment Institute report concluded  
1318 that all investors should incorporate climate change

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1319 awareness into their investment process and that advice is  
1320 being heeded.

1321 Investors representing trillions in assets have urge  
1322 this sector to be more transparent and take responsibility  
1323 for its emissions.

1324 Dr. Kennedy, I listened as there was some discussion  
1325 about shareholders in this whole arena, and shareholders have  
1326 helped drive greater disclosures of companies' climate-  
1327 related risks.

1328 How important is it for shareholders to be given this  
1329 information when making decisions on how to invest their  
1330 money?

1331 Mr. Kennedy. This is a topic that I've not gone into in  
1332 depth. But what I would say is that our economic system, our  
1333 investment system, which is often driven by short-term  
1334 returns, has a great difficulty in dealing with longer-term  
1335 challenges and longer-term economic risks like climate  
1336 change.

1337 And so the more information that can be made available  
1338 to investors about the implications of the investments and  
1339 what those mean in the long term is going to be very  
1340 important and very helpful.

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1341 Mr. Tonko. Thank you. And is there a risks to the  
1342 United States economy if companies fail to make these  
1343 disclosures?

1344 Mr. Kennedy. The risks of climate change itself are  
1345 actually very great for the U.S. as we are already seeing  
1346 significant impacts.

1347 From the changing climate, from increased severe  
1348 weather, from increased sea level rise, storm surge, a wide  
1349 variety of impacts are already starting to show up and we can  
1350 only expect those to continue to increase over time,  
1351 particulate if we don't find ways of reducing emissions.

1352 So the more that can be done from a variety of  
1353 perspectives including in terms of how investment decisions  
1354 are made is going to be critically important to address those  
1355 real risks, going forward.

1356 Mr. Tonko. Thank you. According to Sempra's 2015  
1357 corporate responsibility report, Sempra began responding to  
1358 the annual carbon disclosure project -- CDP survey -- in  
1359 2006, which reports the emissions of major companies and  
1360 releases and assessment of their potential climate risks.

1361 Since 2015, Sempra has scored 100 out of 100 on  
1362 disclosure. Mr. Arriola, why has Sempra made this a priority

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1363 and do you believe that such disclosures are important across  
1364 the energy sector?

1365 Mr. Arriola. Congressman, it's important to us because  
1366 it's important to our consumers in the communities where we  
1367 do business as well as to our shareholders.

1368 As you have mentioned, there's been a trend I would say  
1369 over the last decade that really started in Europe but now  
1370 has come more forcefully to the United States where investors  
1371 -- and I am talking about large institutional investors --  
1372 really do want to understand what companies are doing to  
1373 address climate change, but not just climate change -- how  
1374 they're dealing with water, how they're dealing with  
1375 diversity in companies -- really, both sustainability and  
1376 corporate responsibility.

1377 And we -- this is something that we take very seriously  
1378 in our company and actually on Friday we'll be releasing our  
1379 most recent sustainability report, which I think continues to  
1380 get better and better and it gets acknowledged by different  
1381 organizations because we go beyond what we need to because we  
1382 think it's important for investors to understand what we are  
1383 doing on their behalf.

1384 Mr. Tonko. Thank you. And Mr. Hamm, Continental

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1385 Resources is one of the largest non-responders to CDP's  
1386 annual disclosure request. Any reason why you do not  
1387 participate?

1388 Mr. Hamm. Excuse me. There's not any specific reason.  
1389 You know, climate change -- I am a geologist. I believe that  
1390 we can affect the climate and I certainly think that  
1391 investors can pick or choose which company that they would  
1392 want to invest in and who are the best stewards of the land  
1393 and water, air.

1394 Continental certainly fits in at the top of that rank.  
1395 With horizontal drilling, there's a lot of drilling that goes  
1396 on but it certainly doesn't look like it.

1397 You know, the methane emissions that you talk about, our  
1398 company has been doing green completions as long as I  
1399 remember. So --

1400 Mr. Tonko. But that being said, why not then respond to  
1401 CDP's annual request?

1402 Mr. Hamm. You know, I don't believe we've had the  
1403 specific annual request in that regard that I recall.

1404 Mr. Tonko. Okay. I yield back, Mr. Chair.

1405 Mr. Upton. Thank you. The chair would recognize Mr.  
1406 Latta.

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1407 Mr. Latta. Thanks, Mr. Chairman, and thank you very  
1408 much for holding today's hearing and thank you very much for  
1409 our panellists for being with us today.

1410 It's very, very important as we go forward with energy  
1411 development in this country.

1412 Mr. Yergin, if I can start my questions with you. You  
1413 know, we on this committee have a great opportunity to speak  
1414 with political leaders and business leaders across the world,  
1415 and it's very interesting through the last several years I've  
1416 had -- the discussions I've had with those individuals  
1417 they've all asked this one question -- how is it the United  
1418 States has been able to do what you have done and be able to  
1419 accomplish it so quickly.

1420 And then the next question would be is do we have any  
1421 competitors or other countries that are out there that are  
1422 trying to do the exact same, maybe to duplicate, you know,  
1423 what we've done in this country and are they able to do that  
1424 as we did in this country.

1425 Mr. Yergin. Do you mean in terms of the unconventional  
1426 revolution or in general?

1427 Mr. Latta. Correct.

1428 Mr. Yergin. I think aside from what we've seen in

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1429 Canada, which is kind of like an offshoot of here, no, nobody  
1430 else, and it's a combination of the resource base, the  
1431 ecosystem, our legal system, our entrepreneurial system and  
1432 the fact that we have all these supply chains to respond to  
1433 it.

1434 So that's why, you know, it is something you look at and  
1435 you say things don't happen normally this fast and this has  
1436 really happened fast.

1437 Mr. Latta. Well, I know someone had asked a little bit  
1438 earlier a question to you and you responded back about what's  
1439 happening with Iran and in Venezuela.

1440 Where do you see the United States -- I know this has  
1441 come up in some of the other questions -- but when you're  
1442 looking around the world -- our place in the world, because  
1443 it's hard to explain to people that don't remember the mid-  
1444 1970s and understand what happened in this country, and  
1445 trying to explain to people that, you know, in some areas of  
1446 the country either, A, you didn't buy gas on certain days  
1447 because your license plate didn't end with a even or odd  
1448 number, or, you know, people were just told we didn't any  
1449 energy in this country.

1450 But where do you -- you know, where do you see this

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1451 country and what that means for us geopolitically then?

1452 Mr. Yergin. I think it's -- I mean, at that time the  
1453 view was that, you know, we were just going to be held  
1454 hostage -- that we'd lost control of our lives on a daily  
1455 basis in terms of gas lines and in terms of our economy, and  
1456 this has been such a turnaround.

1457 Ben Bernanke, when he stepped -- was at our conference  
1458 just after he stepped down as head of the Federal Reserve,  
1459 said this unconventional revolution was one of the most  
1460 positive, if not the most positive thing, to have happened  
1461 since the 2008 crisis.

1462 Clearly, people who don't remember, you know, it's --  
1463 you know, they see grainy images maybe on television of gas  
1464 lines and said, what is that all about.

1465 So that's why it's such a big turnaround, and I think it  
1466 took a few years psychologically for people to -- you know,  
1467 for many people to realize that this is for real.

1468 Mr. Latta. Thank you. Mr. Hamm and Mr. Arriola, what  
1469 growth have your companies seen in job creation and career  
1470 opportunities as a result of the shale revolution?

1471 Mr. Arriola. Sure. Starting at Sempra Energy, if you  
1472 would have looked at our company just over 10 years ago, our

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1473 LNG business really didn't exist.

1474 So we've hired, I would say, hundreds of people to help  
1475 develop our LNG projects in Mexico and Louisiana, and we are  
1476 looking forward to hiring even more in Texas.

1477 I think that's probably the biggest part. I can't give  
1478 you an exact number but it's in the hundreds, of well-paying  
1479 jobs.

1480 Mr. Latta. Mr. Hamm.

1481 Mr. Hamm. Well, you know, our company, like a lot of  
1482 independents, you know, we've had good growth over this  
1483 period of time and the industry in total has added over a  
1484 million jobs -- you know, basically, every sector from the  
1485 service sectors through B and P production and exploration,  
1486 and so it's been a tremendous driver of the American economy.

1487 Mr. Latta. Well, I think what was just brought up is  
1488 also important because I think that sometimes when we talk  
1489 about a company and how many jobs are being created it's not  
1490 all the folks out there who are, you know, in -- on the steel  
1491 end and those who produce the pipe, and you name all the  
1492 different things that have to be done to get there, and so  
1493 all of the other jobs that are the offshoots. So it's been a  
1494 great boon for the economy.

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1495 Mr. Arriola. Congressman, if I could also just  
1496 interject that --

1497 Mr. Latta. Yes, absolutely.

1498 Mr. Arriola. -- the jobs I was talking about were  
1499 directly at Sempra.

1500 Mr. Latta. Right.

1501 Mr. Arriola. If you look at the projects that we've had  
1502 -- for example, our Cameron LNG facility -- there are over  
1503 10,000 people on the job today. Once we develop our Port  
1504 Arthur facility, there will be over 3,000 jobs going for four  
1505 to five years.

1506 So it's not necessarily just the jobs directly at our  
1507 company that are important from an economic perspective but  
1508 it's all of the jobs that get created by these projects.

1509 Mr. Yergin. We calculated a couple of years ago that it  
1510 was well over 2 million jobs because the supply chain in the  
1511 Middle West that was a very big beneficiary because of the  
1512 supply chains, because of the manufacturing capabilities that  
1513 fed into this.

1514 Mr. Latta. Thank you very much, Mr. Chairman. My time  
1515 has expired.

1516 Mr. Upton. The gentleman from Texas, Mr. Green.

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1517           Mr. Green. Thank you, Mr. Chairman and the ranking  
1518 member, for holding this important hearing, and I am glad to  
1519 know that the World Gas Conference is here in Washington.

1520           Dr. Yergin, I remember a few years ago we had one of our  
1521 conferences in Houston and you interviewed our EPA  
1522 administrator, Gina McCarthy, and I think that was the first  
1523 time she went to an energy conference, and I appreciate the  
1524 hospitality and also representing an area that deals with  
1525 environmental issues every day because that's our job base,  
1526 our refineries, our chemical plants in east Houston and  
1527 Harris County.

1528           So Texas is the largest generator of wind power in the  
1529 country right now and, hopefully, we can do other things.  
1530 But what we've seen, though is that the mix of the  
1531 electricity -- and we do need electricity plants to produce  
1532 those for those electric cars -- and, you know, our choices  
1533 are in Texas we have 20 percent nuclear power.

1534           That's the base power. You know, wind energy -- coal  
1535 has actually gotten down lower because the price of natural  
1536 gas is so cheap and that's why it's -- I think that mix works  
1537 and we'll continue to see renewables pick up some.

1538           But it's easier to turn on a burner on a natural gas

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1539 plant than it is to try and keep a coal storage facility.

1540           The -- our American energy renaissance -- because I've  
1541 been in Congress since 1993 and it's been amazing what's  
1542 happened. Mr. Arriola, in your testimony you talk about how  
1543 the U.S. regulatory certainty at FERC could hinder U.S. LNG  
1544 development in comparison to countries like Russia,  
1545 Australia, Qatar, or Mozambique. What changes would you like  
1546 to see in the regulatory process?

1547           Mr. Arriola. Thank you, Congressman. You know, I think  
1548 we believe that it's important to have a very thorough and  
1549 exhaustive review process on any permitting, especially from  
1550 FERC and the DOE.

1551           What we'd encourage is just making sure that it's as  
1552 streamlined as possible -- that it's efficient but that we  
1553 check the box as quickly as we can -- that we don't recreate  
1554 the wheel on every project, and I will give you an example.

1555           When we went through the process for our facility in  
1556 Cameron, Louisiana, it took FERC 553 days to get through the  
1557 entire project.

1558           As we are seeking approval here for our Port Arthur LNG  
1559 facility in Texas, it's essentially the same engineering  
1560 design that we are trying to duplicate in Texas. Right now,

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1561 we are estimating that it's probably going to take closer to  
1562 a thousand days.

1563 Now, granted, there are more projects that FERC is  
1564 looking at and we've been working very constructively with  
1565 their staff and everything.

1566 But I think part of it is just making sure that they  
1567 have not just more resources but the right resources and that  
1568 the agencies like FERC and DOE work together to eliminate the  
1569 bottlenecks to the extent that they can.

1570 Mr. Green. Right now I've been told -- and if you could  
1571 confirm it -- the Trump administration's approval time line  
1572 for LNG export permitting trails that of the Obama  
1573 administration. Is that correct?

1574 Mr. Arriola. That's our understanding.

1575 Mr. Green. I think that would shock a lot of us.

1576 Mr. Arriola. Yes.

1577 Mr. Green. And I want to make sure that FERC has the  
1578 staff it needs to move efficiently through the permitting  
1579 process.

1580 I've also -- in fact, this committee passed legislation  
1581 on cross-border pipelines to sell natural gas from Texas or  
1582 New Mexico to Mexico, and Mexico has -- literally, can only

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1583 refine about 60 percent of their petroleum they need for  
1584 diesel and gas and 40 percent of that comes from typically  
1585 the refineries along the Gulf Coast.

1586 The Eagle Ford Basin doesn't stop at the Rio Grande  
1587 River either and there'll come a time in the future that  
1588 Houston's petrochemical industry may need the gas from Mexico  
1589 and those pipelines could benefit us in our industry and east  
1590 end.

1591 Mr. Mullin and I addressed this with the cross-border  
1592 pipeline that passed the House last summer, and I am pleased  
1593 that Senator Hoeven introduced companion language in the  
1594 Senate last week to move it quickly to conference.

1595 Mr. Arriola, could you speak how our energy relationship  
1596 with Mexico has shifted recently? What benefits does the  
1597 U.S. stand to gain from an integrated North American energy  
1598 market between Canada, Mexico, and the United States?

1599 Mr. Arriola. Sure, Congressman. I think it's -- you  
1600 know, this truly has been a win-win situation between the  
1601 United States and Mexico as it pertains to energy trade.

1602 In fact, in the most recent year that I've seen the  
1603 numbers, there's actually been a trade surplus from U.S.  
1604 products and services related to energy that go to Mexico.

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1605           In fact, I think the last number what I saw was,  
1606           roughly, an \$11 billion surplus on the side of the U.S. We  
1607           are continuing to provide them with natural gas. We are  
1608           continuing to provide them with other petro fuels sources,  
1609           for example.

1610           If you look at gasoline, diesel, and other jet fuel  
1611           resources, the United States has, roughly, a 90-day inventory  
1612           supply. Mexico has two to three days.

1613           So there are more opportunities to build infrastructure  
1614           in Mexico that can receive future U.S. products and that's  
1615           one of the things that we are looking at.

1616           Mr. Green. Mr. Chairman, I know I am out of time but if  
1617           --

1618           Mr. Upton. We are going to have votes on the House  
1619           floor shortly. So --

1620           Mr. Green. Okay. Well, I was just going to say that  
1621           it's not just Mexico. It's also LNG exports. In fact, my  
1622           joke is anybody in Louisiana and Texas who has a five-foot  
1623           ditch off the Gulf of Mexico they want an LNG export  
1624           facility.

1625           Thank you, Mr. Chairman.

1626           Mr. Upton. Gentleman's time has expired. Mr. McKinley.

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1627           Mr. McKinley. Thank you, Mr. Chairman. Thank you for  
1628 holding this meeting.

1629           As Dr. Yergin noted earlier in his testimony not only  
1630 this time but previously, there is indeed an abundance of  
1631 natural gas located in the Marcellus and Utica shale gases in  
1632 West Virginia, Ohio, and Pennsylvania, and it's estimated  
1633 that this region will produce about 37 percent of the  
1634 nation's natural gas production by the year 2040.

1635           These shale gases underscore this potential of a  
1636 historic renaissance that he referred to in American energy.  
1637 But as we've heard earlier, the naysayer continue to trot out  
1638 their tired disproven talking points.

1639           Unfortunately, the facts have proved otherwise. Just  
1640 the last 10 years, CO2 emissions in America have gone down by  
1641 20 percent.

1642           Shale gas has given the Appalachian area a breath of  
1643 fresh air, perhaps a chance finally to transform and  
1644 revitalize a whole region of the country, and subsequently  
1645 Rick Perry and the DOE have concluded that there's a need,  
1646 perhaps, to develop a second petro chemical center located in  
1647 the Appalachian region.

1648           A recent study by HSS Market have concluded that the



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1649 economic advantages of extracting ethane in the Appalachian  
1650 region has concluded that the resin could be produced at 23  
1651 percent lower there than being shipped down to the Gulf Coast  
1652 to the crackers and back up. So I think that was interesting  
1653 conclusion with that.

1654 Now, we can achieve lower energy costs and dramatically  
1655 decrease it if we take a different approach and work  
1656 together.

1657 Congress should full innovate research to reduce  
1658 emissions -- the concern, Dr. Kennedy, you're concerned about  
1659 -- if we just put the money into research.

1660 The technology of American scientists developing higher  
1661 efficiency and low emissions could be sold around the world -  
1662 - marketed around the world -- and thereby address this  
1663 worldwide concern about greenhouse gases, because we've got  
1664 to remember the world is going to increase its energy  
1665 production and use by 28 percent by 2040 and fossil fuels by  
1666 will count still for 75 percent of the energy use.

1667 So what my concern is, if that's the case, what are we  
1668 doing with China and India? Isn't it time that some of our  
1669 members recognize -- some of our members recognize that until  
1670 the rest of the world, especially India and China, produces

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1671 electricity more cleanly, continuing to over regulate fossil  
1672 be in America will have virtually no effect on the global  
1673 environment.

1674 Therefore, shouldn't we be first -- innovate first, do  
1675 the research, then regulate?

1676 So, Dr. Yergin, with this shale gas present, this  
1677 revolution going on in Kentucky, Ohio, and West Virginia,  
1678 what potential do you see for a potential petro chemical  
1679 industry up in the Appalachian area and with projection  
1680 they're saying as much as \$36 billion invested and maybe  
1681 100,000 jobs? Do you believe that.

1682 Mr. Yergin. Some people see the Marcellus, now the  
1683 region in the Utica as the largest gas field or gas  
1684 concentration in the world.

1685 I thought that some companies had actually committed to  
1686 build petro chemical facilities there. I thought Shell was  
1687 doing it but you have a --

1688 Mr. McKinley. Shell is doing it in Monaca,  
1689 Pennsylvania. That's one portion of it, but there are  
1690 others. I know they're doing some -- the ethane storage hub  
1691 that we've been promoting here has been the -- the question  
1692 is whether or not any of you have the realization that could

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1693 this be a center of a secondary?

1694 We are not trying to replace Houston, but just is there  
1695 a secondary -- is there a second -- possibility of a  
1696 secondary?

1697 Mr. Yergin. Yes. Sure. I mean, the resources is so  
1698 enormous there. I mean, as you said, it's going to be such a  
1699 large part.

1700 Also, I did want to say -- you mentioned the R and D.  
1701 One of the big themes over at the World Gas Congress has been  
1702 specifically about methane and applying the technologies to  
1703 address methane.

1704 So, I mean, there is definitely a research agenda to  
1705 address the questions you're talking about including methane.

1706 Mr. McKinley. Dr. Arriola, any comments from you?

1707 Mr. Arriola. I really don't have anything to add on  
1708 that other than given the infrastructure that we have and  
1709 lacking pipelines in some parts of our country, it may make  
1710 sense to develop those centers that you're talking about  
1711 closer to the source themselves.

1712 So from an economies of scale standpoint, that could  
1713 very well make sense.

1714 Mr. McKinley. Thank you, and I yield back my time.

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1715 Mr. Upton. Gentleman yields back. The gentleman from  
1716 Vermont, Mr. Welch.

1717 Mr. Welch. Thank you very much. I thank the panel.

1718 Mr. Yergin, your opening statement indicated with the  
1719 shale gale it just has been a huge game changer in jobs and  
1720 economic activity in our ability to go from being an importer  
1721 to an exporter, maybe the largest one.

1722 One of the other issues, though, that I would like to  
1723 focus on is energy efficiency. I mean, it's tremendous that  
1724 we have these resources and it creates the economic activity  
1725 and the jobs.

1726 But some of us are concerned also about carbon emissions  
1727 and the impact that has, and my understanding is that the  
1728 energy efficiency policies that we've been able, and I've  
1729 worked a lot with Mr. McKinley on this actually -- energy  
1730 efficiency has allowed us to save on the demand for energy.

1731 The Alliance to Save Energy says that if we tried to run  
1732 today's economy without energy efficiency improvements that  
1733 have taken place in '73, we'd need 55 percent more energy  
1734 supplies than we now use.

1735 Could you describe what you understand to be the Trump  
1736 administration policies on energy efficiency, A, and, B,

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1737 whether even as we exploit the shale gale, does that suggest  
1738 that we can take our eye off the importance of efficiency?

1739 Mr. Yergin. I am not really in a position to address  
1740 what the -- you know, because I haven't studied what the  
1741 Trump administration's specific policies are.

1742 I do agree with you. When I began my work in energy, it  
1743 was based -- focused on energy efficiency and, off the top of  
1744 my head, I would say that we are probably twice as energy  
1745 efficient today as a country than we were, you know, a few  
1746 decades ago.

1747 So I think energy efficiency is a very important -- you  
1748 know, I regard energy efficiency as another energy source.

1749 Mr. Welch. And my is the energy companies have to be  
1750 part of the solution. They have to be, and I am wondering --  
1751 you're over at the meeting with the gas folks -- 12,000  
1752 people -- are there any topics that are being discussed  
1753 specifically as to energy efficiency?

1754 Mr. Yergin. Well, in the speeches I heard, it was  
1755 certainly said that, you know, this has to be a big part of  
1756 the energy mix and, you know, if we hadn't become more  
1757 efficient as a country, we would be in a -- we would also be  
1758 in a very difficult place.

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1759           The thing about energy efficiency so much, it's -- you  
1760           know, it's -- it goes through the entire economy. It's  
1761           decisions that people make when they build houses.

1762           It's new processes in industry. What's always struck me  
1763           about it, it's a very decentralized activity. There has been  
1764           a general trend towards being more efficient.

1765           Mr. Welch. Is there a place for appropriate regulation  
1766           in order to meet energy efficiency standards, Mr. Yergin?

1767           Mr. Yergin. Yes. I mean, you can see it, for instance,  
1768           in housing and other places and that regulation has been part  
1769           of the mix.

1770           Mr. Welch. Thank you. Mr. Arriola, would you agree with  
1771           that, I mean, as the representative of a major energy  
1772           company?

1773           Mr. Arriola. Yes. What we see, Congressman, is a lot  
1774           of that regulation happens state by state. So, for example,  
1775           in California, whether it's the housing codes or through our  
1776           Public Utilities Commission, there's a lot of work that goes  
1777           on in energy efficiency.

1778           Mr. Welch. So, you know, there's --

1779           Mr. Arriola. And our companies are directly involved to  
1780           help facilitate that.

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1781           Mr. Welch. All right. Mr. Hamm, I know you have been  
1782           supportive of the president's deregulatory agenda. We've  
1783           heard some testimony here about the appropriate use of  
1784           regulations like Energy Star.

1785           Do you support that?

1786           Mr. Hamm. Well, you know, the best efficiencies is  
1787           gained by the private sector. You know, for instance, in  
1788           2014 we had 1,950 rigs working. Today, we've got a thousand  
1789           rigs doing the same job.

1790           So, basically, you have got one rig as efficient as five  
1791           were in the 1990s. So that's efficiencies that you can gain  
1792           from the private sector --

1793           Mr. Welch. Well, that's efficiency in the exploitation  
1794           process, not in the use process, right? Now, do you believe  
1795           that EPA has a role -- the Environmental Protection Agency --  
1796           in promulgating appropriate regulatory mechanisms for energy  
1797           efficiency?

1798           Mr. Hamm. I don't think they -- EPA is there to enforce  
1799           the law and basically ensure that rule of law is followed,  
1800           and so they have that job to do and they do it sometimes very  
1801           well, most of the time very well. But as far as efficiencies  
1802           --

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1803           Mr. Welch. Right. I just have time for one more  
1804 question. What's your view on the president's tariffs on oil  
1805 exports to China -- or the China retaliatory tariffs on us  
1806 with respect to our oil exports?

1807           Mr. Hamm. Well, right now, we don't have tariffs that  
1808 apply to oil going to China, and we'll see if that happens or  
1809 not.

1810           Mr. Welch. Are you -- are you okay with the tariffs?  
1811 Do you think that's a good thing for business?

1812           Mr. Hamm. Am I okay with tariffs? I do not -- I think  
1813 tariffs are counterproductive. I think everybody here  
1814 believes that.

1815           What's going on right now is setting some of that  
1816 straight. You know, the countries have gotten too carried  
1817 away with tariffs in the past. Nothing was done about it,  
1818 and so some of those corrections are being made today.

1819           Mr. Welch. I yield back. Thank you.

1820           Mr. Upton. Gentleman's time has expired. Mr. Griffith.

1821           Mr. Griffith. I thank the gentleman and appreciate it.  
1822 Dr. Yergin, appreciate you being here today. I got a couple  
1823 questions in that regard with the geopolitical aspects of all  
1824 of this.



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1825           So we've heard a lot about foreign countries, and Mr.  
1826           McKinley touched base on it, and we were talking with one of  
1827           the foreign countries earlier today.

1828           But isn't it true that if we were suddenly to cut off  
1829           American gas exports that a lot of the countries,  
1830           particularly some of the developing economies, would just  
1831           continue to use coal from other parts of the world?

1832           Mr. Yergin. Well, I think -- I mean, we are just part  
1833           and we are still a beginning part of the LNG market. We'll  
1834           have more when you guys get going.

1835           But I think there is -- you know, there's a competition  
1836           going on on a global basis for, you know, what's going to be  
1837           the balance between coal and natural gas and renewables for  
1838           developing countries, and I think many of them -- you know,  
1839           there's definitely a push towards using more gas.

1840           We see 15, 20 countries are going to -- that don't  
1841           import LNG now will import LNG because they want to have --  
1842           clean up and not use -- clean up their electric generation.

1843           Mr. Griffith. And one of the questions that I would  
1844           have as we look at this is as we go to using the LNG, are we  
1845           able to compete worldwide with that?

1846           Because, obviously, and I represent a coal district like

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1847 Mr. McKinley does as well -- obviously, you know, it doesn't  
1848 make sense very often unless you need some good high-quality,  
1849 as they called it this morning, coking coal.

1850 But the -- what we call metallurgical coal in my neck of  
1851 the woods -- unless you need that, if you're just buying  
1852 steam coal, it's hard to buy that for basic energy in some  
1853 parts of the world -- hard for us to ship it to them and  
1854 compete against the Australians, and insert about four or  
1855 five other countries.

1856 But from what I understand -- you correct me if I am  
1857 wrong -- our LNG resources can reach worldwide and be pretty  
1858 competitive wherever we go. Isn't that true?

1859 Mr. Yergin. Yes. We are quite competitive in the  
1860 market. You know, we are maybe not as competitive as some  
1861 pipeline suppliers in Europe.

1862 But there's definite -- I mean, I saw it this morning at  
1863 this APEC conference with all these Asian countries. They're  
1864 really interested in important LNG from the United States.

1865 Mr. McKinley. And I think that makes a lot of sense,  
1866 and as a part of that, I would have to say that while I don't  
1867 have any of the Marcellus.

1868 DOE, earlier this year, announced a project in

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1869 conjunction with Virginia Tech in my district to investigate  
1870 the resources -- the resource potential for reservoirs in the  
1871 Nora Gas Field in southwest Virginia, and I am excited that  
1872 this research is being conducted to improve our  
1873 understanding.

1874 But it appears that we are down another level from what  
1875 they've looked at before and so they're drilling some deep  
1876 mines or some deep wells to see what we have down there, and  
1877 we are excited about that because we have coal bed methane  
1878 but we haven't been doing much on any other gas.

1879 We don't have the Marcellus or the Utica shale. But we  
1880 may have this and we are excited about that. We already have  
1881 some petro chemicals -- Eastman Chemical, even though it's in  
1882 Kingsport, Tennessee, and people say, why are you interested  
1883 in it.

1884 They have 10,000 employees and a thousand of them drive  
1885 the eight miles from my district to the plant. So we are  
1886 excited about that.

1887 But I think it's important that we realize that, as we  
1888 move forward, this is important for the world. I also would  
1889 echo some of the comments my colleagues have made that we  
1890 need to do the research, because it's not just the United

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1891 States that we are dealing with.

1892 It's the world and we are looking at global warming, et  
1893 cetera. If we don't provide the research to burn our fuels  
1894 more efficiently worldwide, and something that the rest of  
1895 the world can also afford and obtain, then they're going to  
1896 continue to burn coal.

1897 They're going to continue to burn all kinds of products  
1898 and put stuff in the air, and I know it bores people but it's  
1899 just my favourite factoid of all time.

1900 NASA did a study. They followed a sandstorm from  
1901 Central Asia in the middle of the Gobi Desert, and it takes  
1902 10 days for the air to get from the middle of the Gobi Desert  
1903 to the eastern shore of Virginia, based on their satellite  
1904 research.

1905 So we need to work on this from a worldwide viewpoint  
1906 and not put American jobs out of business because we are  
1907 trying to set the standard, because the rest of the world is  
1908 looking for jobs, period, and if they have to use something  
1909 improper or less efficient they'll do it.

1910 But if we can find a way to do it through research  
1911 they'll share in that. Everybody wants to have a cleaner  
1912 world, but they want to have jobs first because the number-

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1913 one -- the number-one thing is to have jobs and that helps  
1914 your health as well.

1915 Wouldn't that be correct, Dr. Yergin?

1916 Mr. Yergin. Yes, and I love your factoid. I've never  
1917 heard that before.

1918 Mr. McKinley. It's a fun factoid. All right. I yield  
1919 back.

1920 Mr. Upton. Mr. Walberg.

1921 Mr. Walberg. Thank you, Mr. Chairman, and thanks to the  
1922 panel for being here.

1923 Mr. Yergin, in your testimony you mentioned that by 2025  
1924 as many as 4 million jobs -- direct, indirect, and induced --  
1925 could be supported by unconventional oil and gas activities.

1926 Could you explain in further detail for us the types of  
1927 jobs that are supported by unconventional oil and gas  
1928 activities?

1929 Mr. Yergin. Well, those three categories are really  
1930 categories that the Department of Commerce uses. The direct  
1931 jobs would be working on one of Harold Hamm's rigs, working  
1932 in the oil field.

1933 Indirect would be kind of service jobs supporting that,  
1934 and then the induced jobs is the money that flows into the

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1935 community because, as we've seen in Pennsylvania, suddenly  
1936 people are able to buy cars, are able to buy houses.

1937 Realtors service computer specialists in California,  
1938 financial people in New York, and so that's kind of the  
1939 methodology that's used for estimating that, and what it  
1940 really says that these supply chains go all the way the  
1941 across the country and the money that's being spent is  
1942 staying in this country and being distributed in our economy.

1943 Mr. Walberg. Moving along with that, several of you  
1944 mentioned the numbers of jobs -- direct, indirect, in  
1945 construction as well as exploration for finding all that go  
1946 on there.

1947 Let me ask Mr. Hamm and Mr. Arriola, what types of job  
1948 training and recruitment efforts are you using to meet those  
1949 needs?

1950 I mean, we see all across the vocational spectrum today  
1951 a real lack of people to do the jobs -- real rural jobs that  
1952 we need -- and what are you doing to train people for the  
1953 jobs?

1954 Mr. Arriola. Congressman, I can tell you, in the case  
1955 of the LNG facilities that we are talking about, we work very  
1956 closely, obviously, with our subcontractors that are hiring

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1957 people but we are also working directly with the trades to  
1958 train people, whether it's welders, whether it's supply  
1959 procurement experts.

1960 There's a whole host of jobs, whether they're low  
1961 skilled or high skilled that we are trying to do, and I think  
1962 one of the great things is we are creating a pipeline of  
1963 skilled workers that -- especially in some of these areas  
1964 that workers that wouldn't necessarily have opportunities  
1965 that can now go from facility to facility to continue to  
1966 build.

1967 So sometimes we think of these as temporary jobs but  
1968 they're really skills that are being developed that can be  
1969 utilized across the construction industry to continue to  
1970 build energy infrastructure.

1971 Mr. Walberg. So you're working with the trades. What  
1972 other -- I mean --

1973 Mr. Arriola. We are working with the trades in the case  
1974 of our utilities where we are enhancing pipelines to carry  
1975 natural gas.

1976 We are working with the junior colleges and other  
1977 organizations to identify people that are coming directly out  
1978 of high school or junior colleges to give them the skills

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1979 that they need to be able to be productive members of our  
1980 team.

1981 Mr. Walberg. Mr. Hamm, I would ask you if you'd respond  
1982 as well, especially since being an innovator -- innovation in  
1983 directional drilling and all of that.

1984 Mr. Hamm. Thank you. What we've seen, really, that  
1985 added so many new jobs is these very expensive petro chemical  
1986 plants that have been added with all the natural gas  
1987 resources that we have.

1988 In fact, it's been estimated that one out of eight  
1989 people, you know, have been associated with our industry. So  
1990 it's very intense, particularly in Houston and some of the  
1991 areas that these plants locate.

1992 And so it's very intense. Vocational technical training  
1993 has helped a great deal in places like Oklahoma. As far as  
1994 our industry goes, it's been a great resource.

1995 But it seems like the -- you know, we are down to about  
1996 3.8 percent of unemployment in this country now, which is  
1997 wonderful, and the closer you get to the 3 percent level, the  
1998 harder it is to find those employees that you need.

1999 But so far, we've been able to do it.

2000 Mr. Walberg. Recruit and train your own? Is that how



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2001       you --

2002               Mr. Hamm. We recruit and we've trained. We train both  
2003 at the company level and then also we use technical schools  
2004 for training as well.

2005               Mr. Walberg. Thank you. I yield back.

2006               Mr. Upton. Mr. Duncan.

2007               Mr. Duncan. Thank you, Mr. Chairman. Thanks, everyone,  
2008 for being here. It's been a great hearing so far. As we all  
2009 know, the United States is well on our way to becoming a net  
2010 energy exporter by 2020 -- I think a natural gas exporter --  
2011 it was the first time last year -- first time since 1957, I  
2012 believe.

2013               I commend the Trump administration's support for robust  
2014 domestic energy production, which has consequently  
2015 strengthened our leadership on the world stage.

2016               Mr. Arriola, you note in your testimony that the failure  
2017 of the U.S. to seize the current LNG opportunity has  
2018 international implications.

2019               I couldn't agree with you more, and besides the fact  
2020 exporting gas to U.S. allies will contribute up to 452,000  
2021 American jobs from 2016 and 2035, add about \$73.6 billion  
2022 annually to the U.S. economy. It can also provide energy

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2023 security to our allies.

2024 Prior to serving on the Energy and Commerce Committee, I  
2025 served as chairman of the Western Hemisphere Subcommittee on  
2026 the House Foreign Affairs Committee and I utilized that role  
2027 as that chairman to focus on energy opportunities in North  
2028 and South America and how we can work to achieve not only  
2029 America energy independence and energy security but also  
2030 hemispheric energy security and independence.

2031 In this region of the world, we have the ability through  
2032 U.S. LNG exports to help the energy poor. Countries reduce  
2033 their dependence on corrupt state-owned regimes and increase  
2034 the quality of life for so many people around the world.

2035 I talk about quality of life a lot of times, how energy  
2036 can improve the quality of lives. Just in infant mortality  
2037 rate -- through energy and a constant 24/7 baseload power  
2038 supply that that energy, possibly with LNG natural gas-fired  
2039 power plants providing that electricity can keep babies.  
2040 Where you have intermittent power now in neonatal intensive  
2041 care and incubators cannot run to keep those babies alive,  
2042 you see a high infant mortality rate.

2043 A lot of quality of life issues that we, as Americans,  
2044 with our energy -- abundant energy resources, exporting those

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2045 to our friends and allies around the world to improve the  
2046 quality of life of folks elsewhere.

2047 So, Mr. Arriola, from your perspective, how can LNG  
2048 terminals further open up access for U.S. LNG in these  
2049 markets?

2050 Mr. Arriola. Well, Congressman, your point about  
2051 natural gas and different types of energy impacting more than  
2052 just the economic side is truly right on.

2053 In fact, I saw -- I spoke to a professor from the  
2054 Stanford Natural Gas Initiative yesterday and he shared with  
2055 me in a conference we were at that, although we don't talk  
2056 about it very much, indoor air pollution is one of the  
2057 largest killers in this world, and we don't think about it  
2058 here in the United States because we have, for the most part,  
2059 natural gas or electricity to help, from a cooking fuels  
2060 perspective.

2061 But if you go to other countries -- developing  
2062 countries, they use wood. They use dung. They use charcoal,  
2063 and last year, roughly, 4 million people died from indoor air  
2064 pollution caused by cooking fuel.

2065 Mr. Duncan. And I am glad you said that. I talk about  
2066 that all the time. The indoor air quality is terrible when

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2067       you're burning on wood, charcoal, dung, other things that  
2068       people around the world have to cook on, and the fact that  
2069       they don't have a 24/7 baseload power supply to keep their  
2070       food fresh in a refrigerated environment.

2071             Mr. Arriola. So not only are we impacting economic  
2072       prosperity around the globe by being able to export clean  
2073       U.S. natural gas, but we are changing people's lives. We are  
2074       changing the health and their livelihood.

2075             Mr. Duncan. Improving lives of so many people around  
2076       the world through American resources that we take for  
2077       granted. We take for granted that that light is going to  
2078       come on when we flip the switch.

2079             We take for granted that the machines of industry to  
2080       produce the widgets that America produces -- that that  
2081       electricity is going to be there to provide for those  
2082       machineries to turn on.

2083             But you know what? It's not just a third world problem.  
2084       Even in second world and first world Europe they have  
2085       problems with intermittency and power supplies.

2086             So this is geopolitics of American energy. When I was  
2087       in Spain -- and I understand Portugal is the same way -- but  
2088       they want to be the LNG importer for Western Europe because

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2089 right now, Western Europe is relying on who? Russia.

2090 Russia is a gas station masquerading as a country. But  
2091 they're providing that natural gas to Europe and they use the  
2092 levers of influence of turning that spigot on and off to  
2093 affect policy not only in Eastern Europe but in Western  
2094 Europe, and as those pipelines continue to be built to  
2095 provide that natural gas, Western Europe is looking west to  
2096 the United States, a stable energy producer, an ally and a  
2097 friend, to provide LNG so they can meet their energy needs  
2098 and lessen their dependence not on the Middle East for their  
2099 energy but lessen their dependence on Russia and their less  
2100 dependence on Russian gas and more strong dependence on,  
2101 possibly, hopefully, American LNG exports to provide that  
2102 energy.

2103 So the geopolitics are real. I appreciate your  
2104 comments, and let's improve the lives of folks around the  
2105 world through American energy production.

2106 With that, Mr. Chairman, I yield back.

2107 Mr. Upton. The gentleman yields back. I regret to say  
2108 that votes on the floor have started again. They're not  
2109 going to be completed, they tell us, until after 4:00  
2110 o'clock.

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2111 I know a couple of our witnesses have to leave by 3:45.  
2112 So I am going to ask that Mr. Olson, who's next in line for  
2113 questions, take the chair and he will ask questions, at which  
2114 point we will adjourn, and those members wishing to still ask  
2115 questions will do it in writing, and if you could respond on  
2116 a timely basis we'll adjourn rather than keep you here until  
2117 4:15, knowing that all of you are pretty much gone.

2118 Mr. Olson.

2119 Mr. Olson. [Presiding.] I thank the chair, and welcome  
2120 to our four witnesses.

2121 I want to start by saying congratulations to our friends  
2122 at -- our good friends at Sempra. Big merger with Oncor.  
2123 Congratulations.

2124 Mr. Arriola. Thank you.

2125 Mr. Olson. Mr. Arriola, your company is working on some  
2126 significant LNG export terminals along the Gulf Coast. You  
2127 mentioned Cameron being up and running, Port Arthur coming  
2128 online.

2129 Can you talk about why getting American liquefied  
2130 natural gas to market is time sensitive? Why does it matter  
2131 how fast we ramp this production up? What markets are in  
2132 jeopardy if we delay or drag this out?

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2133 Mr. Arriola. Sure, Congressman.

2134 I think, as we've discussed, when foreign countries  
2135 decide to enter into contracts for LNG, they're ordinarily in  
2136 the 20- to 30-year time frame. And so as I am buying a  
2137 product or a service for 20 or 30 years, I don't need to come  
2138 back every year and re-up.

2139 And so as U.S. companies, including Sempra, look at  
2140 building a project, whether it's in Cameron or in Port  
2141 Arthur, we are really focused on trying to get all those  
2142 contracts together up front so that we can get them financed  
2143 and to build the project.

2144 If we can't get those projects this year or next year  
2145 because somebody else has already signed up these 20- to 30-  
2146 year contracts, we are out of the market, and the  
2147 construction jobs that we've been talking about and the  
2148 impact to the local economy goes away, or never develops, I  
2149 should say.

2150 Mr. Olson. Yes. Thousands and thousands of American  
2151 jobs. Mr. Hamm, the people back home in Texas 22 want me to  
2152 thank you for your efforts in the Bakken shale play to change  
2153 the entire world and America's energy future.

2154 We are now an energy dominant country because of you,

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2155 Mr. Hamm, and a Texan named George Mitchell at the Barnett  
2156 shale play.

2157 My question is, can you talk about the most important  
2158 actions that the Trump administration can take to help you  
2159 with oil and gas production?

2160 You mentioned adjusting the CAFE standards, ACC. How  
2161 about public lands, capturing other things? What can we do  
2162 to help you out and make sure this production continues and  
2163 doesn't get stifled by Washington, D.C.?

2164 Mr. Hamm. Well, we have a friendly audience here that  
2165 listened to us today, which is good. We need to do a lot  
2166 with federal lands. They should also participate in this  
2167 energy renaissance, and they haven't up to this point.

2168 The bulk of what has been done has been on fee lands,  
2169 particularly in the Bakken and Texas, and we need to get it  
2170 where permitting could be done rapidly instead of waiting,  
2171 you know, six months to a year and so that's one thing we are  
2172 working on that.

2173 And we have an audience that's listening and wanting to  
2174 do the right thing. So I think we are moving in the right  
2175 direction. We just need to keep the ball rolling to get it  
2176 corrected while we are doing it.

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2177           Mr. Olson. Yes, and thank you for your example of what  
2178           the private sector can do. The private sector developed  
2179           directional drilling and hydraulic fracturing.

2180           That wasn't something that came from D.C. That came  
2181           from Harold Hamm and George Mitchell. So thank you for that.

2182           My final question is for you, Dr. Yergin. Let's talk  
2183           about CERAWeek. It used to be CERADay, maybe CERAHour in 19,  
2184           what, 83? You got that ball rolling, and now it rolled into  
2185           the energy capital of the entire world -- Houston, Texas.

2186           Your testimony mentioned how the revolution in shale oil  
2187           and gas -- the shale gale -- has had enormous impact on our  
2188           relationships abroad.

2189           I've seen that firsthand. You mentioned India. I went  
2190           there this past March. Their motto is, natural gas for today  
2191           -- renewables for the future.

2192           But as you mentioned, right now they've signed a  
2193           contract for 20 years of liquefied natural gas I think  
2194           somewhere about 14.4 million metric tons from America to  
2195           India. That helps them get their air cleaner. It helps them  
2196           where they want to go.

2197           Also, as you mentioned, they've got, I heard, 2 million  
2198           barrels of American crude oil that they haven't had for

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2199 almost 50 years. They are taking the wood to OPEC and Russia  
2200 with our energy.

2201 And so my questions are can you tell me more details  
2202 about what that means for allies? We can help out India. We  
2203 can help out South Korea, Japan, even help out China getting  
2204 their air cleaner. How can we use this energy renaissance to  
2205 make the world better?

2206 Mr. Yergin. I think, first of all, by helping to reduce  
2207 conflict.

2208 Secondly, I think it builds confidence. I think it  
2209 really -- what's happened here in the United States is  
2210 actually a big contribution to energy security for the whole  
2211 world and we benefit from that.

2212 So I think it radiates out from it, and I think what you  
2213 described in India -- I've seen it in other countries, too --  
2214 it gives a -- they have a deeper relationship with the United  
2215 States and it connects them more to us, and I think that's  
2216 very beneficial for our overall political situation in the  
2217 world.

2218 Mr. Olson. One example -- Mr. Shimkus signed this  
2219 poster on the floor last week -- this big tanker ship called  
2220 Independence was pulled into Lithuania.

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2221           Probably 500 people -- normal people from Lithuania --  
2222           were greeting this tanker ship going, yay, yay. That's  
2223           because they know that takes Mr. Putin's weapon away from him  
2224           forever.

2225           Mr. Yergin. Well, I think it's -- I think it's true  
2226           that what's happened with LNG to Europe -- and it's not only  
2227           us but from others -- it's really, in a sense, depoliticized  
2228           -- it turns Europe more into a gas market and takes out the  
2229           kind of political implications for it.

2230           So I think it's something that's very welcome in those  
2231           countries -- that they know that we are there and we are  
2232           their friend.

2233           Mr. Olson. I am out of time.

2234           Just one warning, sir -- my Houston Astros will beat the  
2235           Boston Red Sox again this year, going for the World Series.

2236           Mr. Yergin. What a forecaster.

2237           [Laughter.]

2238           Mr. Olson. Pursuant to committee rules, I remind  
2239           members that they have 10 business days to submit additional  
2240           questions for the record.

2241           I would ask that witnesses submit their answers -- their  
2242           responses -- within 10 business days upon receipt of those

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2243 questions.

2244 Without objection, this subcommittee is adjourned.

2245 [Whereupon, at 3:36 p.m., the committee was adjourned.]

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