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6 STATE OF THE NATION'S ENERGY INFRASTRUCTURE

7 TUESDAY, FEBRUARY 27, 2018

8 House of Representatives

9 Subcommittee on Energy

10 Committee on Energy and Commerce

11 Washington, D.C.

12

13

14

15 The subcommittee met, pursuant to call, at 10:00 a.m.,  
16 in Room 2322 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), Rush, McNerney, Peters, Green, Castor,  
22 Sarbanes, Tonko, Loeb sack, Schrader, Kennedy, and Pallone (ex

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23 officio).

24 Staff present: Mike Bloomquist, Staff Director; Daniel  
25 Butler, Staff Assistant; Kelly Collins, Legislative Clerk,  
26 Energy/Environment; Jordan Davis, Director of Policy and  
27 External Affairs; Wyatt Ellertson, Professional Staff,  
28 Energy/Environment; Margaret Tucker Fogarty, Staff Assistant;  
29 Adam Fromm, Director of Outreach and Coalitions; Jordan  
30 Haverly, Policy Coordinator, Environment; Ben Lieberman,  
31 Senior Counsel, Energy; Milly Lothian, Press Assistant &  
32 Digital Coordinator; Mary Martin, Chief Counsel,  
33 Energy/Environment; Brandon Mooney, Deputy Chief Counsel,  
34 Energy; Mark Ratner, Policy Coordinator; Annelise Rickert,  
35 Counsel, Energy; Dan Schneider, Press Secretary; Austin  
36 Stonebreaker, Press Assistant; Madeline Vey, Policy  
37 Coordinator, DCCP; Hamlin Wade, Special Advisor, External  
38 Affairs; Priscilla Barbour, Minority Energy Fellow; Evan  
39 Gilbert, Minority Press Assistant; Tiffany Guarascio,  
40 Minority Deputy Staff Director and Chief Health Advisor;  
41 Caitlin Haberman, Minority Professional Staff Member; Rick  
42 Kessler, Minority Senior Advisor and Staff Director, Energy  
43 and Environment; John Marshall, Minority Policy Coordinator;  
44 Alexander Ratner, Minority Policy Analyst; and Andrew

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45 Souvall, Minority Director of Communications, Outreach and  
46 Member Services.

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47 Mr. Upton. Today's hearing, "The State of the Nation's  
48 Energy Infrastructure," will provide members with the  
49 opportunity to explore the challenges and the opportunities  
50 related to the maintenance, modernization, and development of  
51 energy infrastructure.

52 Two weeks ago, the White House unveiled its framework  
53 for rebuilding infrastructure across the country. Citing the  
54 need to maintain our country's global competitiveness and  
55 improve our citizens' quality of life, the president's plan  
56 seeks to stimulate at least \$1.5 trillion in new investment  
57 over the next decade.

58 And while the president's plan touches all sectors, from  
59 roads and bridges to airports and hospitals and dams, this  
60 hearing will focus on the state of the nation's energy  
61 infrastructure and how we can make meaningful improvements.

62 Joining us today is a panel of witnesses who can speak  
63 to the needs and challenges of a changing energy landscape.  
64 Since the start of the 115th Congress, this committee has  
65 held dozens of hearings related to infrastructure and the  
66 House has already passed legislation on interstate pipeline  
67 siting, hydropower licensing, and the development of cross-  
68 border energy infrastructure.

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69           That being said, this committee's infrastructure efforts  
70 are ongoing as there is no question that more needs to get  
71 done and more projects need to get built, for to deliver our  
72 nation's abundant energy resources to consumers in a  
73 reliable, efficient, and cost-effective manner, new electric  
74 transmission lines and natural gas pipelines have got to be  
75 constructed.

76           And as we have heard during our series of Powering  
77 America hearings, the nation's electrical grid faces enormous  
78 challenges as needed infrastructure is not getting built fast  
79 enough in some areas of the country.

80           Additionally, we have got to face the fact that much of  
81 our existing infrastructure is in fact aging. The average  
82 age of a coal-fired power plant in the U.S. is 40 years old  
83 and the country's fleet of nuclear reactors isn't much  
84 younger.

85           Many of these power plants are now facing retirement due  
86 to their inability to compete economically in a market-based  
87 environment.

88           Notably, the Oyster Creek Nuclear Station in New Jersey,  
89 which is the oldest reactor in the country, recently  
90 announced that it will retire later this year after nearly 50

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91 years of service.

92 So we can't afford to have the energy infrastructure  
93 that does not meet America's needs or reflect the evolution  
94 of our energy markets.

95 Instead, we have got to modernize our outdated system by  
96 encouraging innovative developments and state-of-the-art  
97 technology such as battery storage and advanced transmission  
98 devices.

99 I should recognize that much is already being done on  
100 this front with private capital largely funding these  
101 improvements. In fact, electric utilities and independent  
102 transmission developers spent an estimated \$23 billion in  
103 2017.

104 A new transmission infrastructure alone while the  
105 natural gas utilities invested a record of \$25 billion last  
106 year across its industry.

107 Though these private sector investments are critically  
108 in a highly capital-intensive industry, we should be mindful  
109 that none of it will get built if we don't have a trained  
110 workforce that is capable of innovating, designing, and  
111 constructing this new infrastructure.

112 Not only do we need skilled linesmen and women and

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113 pipefitters but we also need the engineers to power systems  
114 in nuclear technologies in many other trades.

115 The challenge associated with developing a skilled  
116 workforce may be greater than the challenge of siting and  
117 constructing infrastructure projects.

118 So that's an important part of this conversation. I am  
119 glad we have some of the folks who can speak to us on that  
120 issue, and with that, I want to welcome our panel for sure  
121 and yield for an opening statement -- the balance of my time  
122 to Mr. Olson.

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

124

125 \*\*\*\*\*INSERT 1\*\*\*\*\*

126

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127           Mr. Olson. I thank the chair, and welcome to our six  
128 witnesses.

129           Having a Texan on the panel gives me a chance to do what  
130 Texans love to do and that's to brag about my home state.  
131 The greater Houston region has some of the best technical  
132 colleges in the country and Texas-22, who I worked for, has  
133 the best of the best.

134           Schools like Houston Community College, Texas State  
135 Technical College, Alvin Community College, Wharton County  
136 Junior College, who actually built a new campus in Matagorda  
137 County to meet the needs of retiring workers at the South  
138 Texas Power Plant.

139           But the top gun at home is San Jacinto College and  
140 that's because of their chancellor, Brenda Hellyer. We are  
141 honored to have you here, Chancellor Hellyer.

142           When America's largest petrochemical complex has a need,  
143 they turn to Dr. Hellyer and San Jac. One example is their  
144 new maritime technological training center. It simulates all  
145 51 miles of the Port of Houston -- Houston Ship Channel and  
146 it's so real.

147           I was down there a year ago right by the Harbor Bridge.  
148 It snowed heavy snow -- blizzard. The waves started rocking

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149 my little tugboat. I got seasick in a simulator. It's real,  
150 and that's San Jacinto Junior -- San Jacinto College.

151 Welcome, Dr. Hellyer. Glad to have you.

152 I yield back.

153 Mr. Upton. Gentleman's time has expired.

154 The chair recognizes the ranking member of the  
155 subcommittee, the gentleman from Illinois, Mr. Rush.

156 Mr. Rush. Mr. Chairman, I am at a loss for words on  
157 that. But I want to thank you, Mr. Chairman, for holding  
158 this important hearing today on the energy infrastructure.

159 As you know, investing in the nation's aging  
160 infrastructure is a top priority for members on both sides of  
161 the aisle and it is my hope that we can address this issue in  
162 a bipartisan manner.

163 Unfortunately, Mr. Chairman, the proposal put forth by  
164 the Trump administration leaves a lot to be desired and,  
165 frankly, is a poor starting point, from my perspective.

166 The president's infrastructure plan fails to provide  
167 adequate federal investment in the nation's antiquated energy  
168 infrastructure.

169 But, rather, it attempts to short circuit environmental  
170 regulations and it places the vast majority of the funding

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171 burden on cash-strapped states and local municipalities.

172 In fact, under the administration's proposal, states  
173 will be prohibited from receiving more than 10 percent of the  
174 total grant fund and 80 percent of new investment must come  
175 from non-federal sources.

176 Mr. Chairman, this proposal resembles less of a national  
177 infrastructure plan and instead will simply pick winners and  
178 losers where only a limited number of states, localities, and  
179 affluent communities will actually benefit from the  
180 president's plan.

181 Instead, Mr. Chairman, I want to urge this subcommittee  
182 to look at a more serious alternative outlined in H.R. 2479,  
183 the Leading Infrastructure for Tomorrow's America, or LIFT  
184 America, Act introduced by Ranking Member Pallone, myself,  
185 and the rest of the minority members of the Energy and  
186 Commerce Committee back in May 2017.

187 This bill offers thoughtful recommendations that will  
188 surely benefit all Americans including providing provisions  
189 that would invest in cleaner water infrastructure, clean  
190 energy infrastructure, more resilient broadband, brownfields  
191 redevelopment, and last but not least, health care  
192 infrastructure.

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193           Additionally, Mr. Chairman, I have also sponsored a bill  
194           that would strengthen the nation's workforce by investing in  
195           initiatives to train minority women and unemployed coal  
196           workers to compete for good-paying energy and manufacturing  
197           jobs and careers.

198           Mr. Chairman, it is not enough to simply curtail an  
199           environmental protection and pass the funding for immersion  
200           onto the same.

201           I look forward to hearing from our esteemed witnesses  
202           and I look forward to working with the majority.

203           Mr. Chairman, with that, I yield back -- I yield my time  
204           to my good friend, also from the great state of Texas, Mr.  
205           Green.

206           Mr. Green. Mr. Chairman, members, I thank you colleague  
207           -- ranking member -- for yielding to me today.

208           First of all, I want to say that this is the first  
209           committee hearing we have had with -- that Pete Olson hasn't  
210           talked about the Astros.

211           So Pete, I want to tell you how much -- how proud we are  
212           on this side about the Castros.

213           Mr. Olson. It's coming. It's coming.

214           Mr. Green. But, more importantly, I want to welcome our

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215 panel and particularly our chancellor from San Jac North.  
216 I've worked for many years with San Jacinto College in  
217 training.

218 In East Harris County, we could have every union  
219 electrician in the country come to Houston and we'd still  
220 need more electricians because the expansion of our  
221 industries in East Harris County because of the Eagle Ford  
222 and now with Permian Basin. So we have refineries, chemical  
223 plants, and things like that.

224 But I am a native Houstonian and you all have heard a  
225 lot of times I've never not lived on a pipeline easement in  
226 Houston, Texas. No matter where I've lived, I have a  
227 pipeline easement there and I get all these nice letters  
228 during the year making sure I know what happens if there is  
229 an accident.

230 But our infrastructure is so important. It's not just  
231 highways and rails and airports but it's also pipelines, and  
232 because of the success we are having in some of the states, I  
233 think we need to have that infrastructure on energy  
234 pipelines, too.

235 And with that, I'll thank my colleague. I know I've  
236 used up the time he yielded to me.

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237 Thank you.

238 Mr. Upton. Gentleman's time has expired.

239 The chair will recognize the chairman of the full  
240 committee, the gentleman from the good state of Oregon, Mr.  
241 Walden.

242 The Chairman. I thank the gentleman, and we are having  
243 a lot of talk about aging infrastructure and I don't think  
244 that's fair to Adam Kinzinger just because it's his 40th  
245 birthday today, speaking of aging infrastructure.

246 [Laughter.]

247 Happy birthday. Today's hearing explores the state of  
248 the nation's energy infrastructure. It's another important  
249 step in our commitment to putting the needs of consumers  
250 first.

251 Energy, truly the driving force in our economy and our  
252 country, and our hearing today is focused on ways to expand  
253 and improve and modernize our infrastructure so we can  
254 deliver energy to consumers more safely, reliably, and cost  
255 effectively.

256 So this morning we have an excellent panel of witnesses  
257 who are going to share with us some challenges and  
258 opportunities that the country faces and you all face to

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259 modernize our infrastructure in the energy realm.

260 We will gather your perspectives and we will learn more  
261 about what we need to do in public policy. Just for the  
262 record, our committee has been very active in this area.

263 A lot of work has gone into our legislative initiatives  
264 on the nation's infrastructure. We know there is a lot more  
265 that needs to be done.

266 This hearing marks our forty-seventh -- forty-seventh  
267 hearing on infrastructure just in this Congress -- session of  
268 Congress alone.

269 We have 24 energy bills and environmental bills that  
270 have passed the House already and have gone over to the  
271 Senate. They address pipeline infrastructure, hydropower  
272 relicensing, brownfields, air quality standards, energy  
273 efficiency, drinking water improvement, and nuclear waste  
274 storage.

275 All this work is incredibly important for my district.  
276 These bills will have a direct positive impact for our local  
277 economies and our communities both in Oregon and across the  
278 country, and now we look forward to continuing our work with  
279 the United State Senate and the White House to get these  
280 measures signed into law.

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281 I applaud President Trump for not only recognizing the  
282 need to improve all facets of our nation's infrastructure but  
283 also for demonstrating the leadership needed to push forward  
284 this major initiative for our country.

285 While there are many difficult details to work out, I  
286 believe there is support for a broad infrastructure bill.  
287 Just the other week I participated in a bipartisan bicameral  
288 infrastructure meeting hosted by the president at the White  
289 House where we talked about our shared priorities for  
290 rebuilding our nation's infrastructure from roads and bridges  
291 to pipelines and for broadband in our un-served and  
292 underserved areas of the country.

293 While much of the conversation around infrastructure has  
294 focused on ways to increase federal spending, we should be  
295 mindful that most of the nation's energy infrastructure is  
296 privately owned and operated.

297 We all know that financing is a crucial aspect of any  
298 infrastructure plan so we are thinking outside the box to see  
299 where we can make the most progress with the limited federal  
300 money that is available.

301 We are focused on fixing the regulatory environment,  
302 encouraging public-private partnerships, and strengthening

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303 our workforce.

304 Our nation's energy infrastructure, the traditional base  
305 load power plants, windmills, solar panels, hydroelectric  
306 dams, pipelines, power lines, fossil fuel production  
307 facilities, and import-export terminals, they make up the  
308 real backbone of America's economy.

309 With innovation and technological advancements driving  
310 change at a rapid pace it's our responsibility as members of  
311 this committee to understand the challenges and the  
312 opportunities associated with keeping these energy systems  
313 operating safely and reliably.

314 So we have got a lot of work to do but we are moving in  
315 the right direction, and with that, I want to thank our  
316 witnesses for appearing before us today.

317 I look forward to your testimony and the work going  
318 forward in this matter under Chairman Upton's leadership.

319 So with that, Mr. Chairman, unless anyone else wants the  
320 remainder of my time, I'd be happy to yield back and hear  
321 from our witnesses.

322 [The prepared statement of Mr. Walden follows:]

323

324 \*\*\*\*\*INSERT 2\*\*\*\*\*



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325 Mr. Upton. Gentleman yields back.

326 The chair recognizes the ranking member of the full  
327 committee, the gentleman from New Jersey, Mr. Pallone, for an  
328 opening statement.

329 Mr. Pallone. Thank you, Chairman Upton.

330 Revitalizing and modernizing our nation's crumbling  
331 infrastructure should be an area where Democrats and  
332 Republicans can find common ground.

333 Unfortunately, the plan President Trump unveiled two  
334 weeks ago barely mentions energy and, as a whole, represents  
335 another cynical bait and switch.

336 After promising for more than a year to invest over a  
337 trillion dollars in America's infrastructure, the president's  
338 plan does not offer any new funding for infrastructure.

339 This anemic proposal calls for \$250 billion in federal  
340 spending but even that is offset by \$200 billion in cuts to  
341 vital existing programs.

342 Worse yet, the 80 percent match requirement will do  
343 little to help towns, cities, and counties all across this  
344 country that simply cannot afford this kind of spending.

345 In fact, the Wharton School at the University of  
346 Pennsylvania where President Trump attended college provides

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347 a withering criticism of his so-called infrastructure plan,  
348 stating that it really won't leverage funds and that, quote,  
349 "There will be little to no impact on the economy."

350 To call the Trump plan worthless isn't partisan. It's  
351 the reality. In stark contrast, Democrats actually have a  
352 real plan, a better deal for investing and rebuilding  
353 America. This plan includes important parts of the committee  
354 Democrats' bill, the LIFT America Act.

355 This legislation would create jobs and boost the economy  
356 by putting real money towards infrastructure like replacing  
357 drinking water pipes, cleaning up brown field sites,  
358 supporting energy efficiency and clean energy, extending  
359 broadband service and revitalizing our hospitals and health  
360 care infrastructure.

361 Democrats are committed to delivering a better deal for  
362 Americans, providing cheap clean energy for consumers and  
363 modernizing our aging energy infrastructure so that it's  
364 secure, efficient, and resilient.

365 We will make key investments that will transport our  
366 energy infrastructure into the 21st century energy economy  
367 while creating jobs of the future that lessen our carbon  
368 footprint.

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369           We do this by expanding renewable energy and by  
370           investing in energy efficiency programs that will lower  
371           Americans' monthly bills and these programs are good for the  
372           environment and good for consumers.

373           The Democrats' LIFT America Act is a bold proposal that  
374           will revitalize our infrastructure, grow our economy, and  
375           create new jobs, and to ensure good family-sustaining wages  
376           for workers we are committed to maintaining Davis-Bacon  
377           community-based wage standards and other worker protections.  
378           We will invest in workers through robust training, provide  
379           job opportunities for veterans, and level the playing field  
380           for small businesses including women and minority-owned  
381           businesses.

382           And what we won't do is buy into the false choice  
383           between a strong economy and a healthy environment.  
384           President and Republicans keep pushing this outdated false  
385           narrative, but the reality is that a clean and safe  
386           environment supports a strong economy.

387           Environmental safeguards are not the obstacle to  
388           infrastructure improvements. The real obstacle is the lack  
389           of funds.

390           President Trump spared no expense and required no

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391 offsets for tax breaks to fuel profits on Wall Street, but  
392 when it comes to helping Main Street all he's offering is  
393 Monopoly money.

394 And we can and must do better. I hope my colleagues on  
395 the other side of the aisle agree and will work with us to  
396 invest in America and truly make our infrastructure great  
397 again.

398 And I yield the balance of my time to the gentleman from  
399 New York, Mr. Tonko.

400 Mr. Tonko. And I thank the ranking member of the  
401 standing committee for yielding.

402 It's my pleasure to thank Chair Upton and Ranker Rush  
403 for hosting this hearing, which is going to enable us to  
404 better understand the full range of possibilities of energy  
405 infrastructure that should be considered.

406 So I welcome the panel here this morning and in  
407 particular want to offer my welcome to one of the mayors of  
408 the communities that I represent in the 20th Congressional  
409 District of New York, the Honorable Gary McCarthy, mayor of  
410 the great city of Schenectady, New York, in the 20th  
411 District.

412 And I thank the mayor for being here. He's a great

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413 friend, a super colleague, and a very thoughtful leader, a  
414 progressive leader, and one who has brought great vision to  
415 leading the city of Schenectady, which is dubbed the electric  
416 city, as it opened its gates to Thomas Alva Edison at one  
417 time, and we have great heritage as it relates to energy  
418 development.

419 But I want to bring attention to the city of  
420 Schenectady's report under the tutelage of Mayor McCarthy,  
421 the 2017 Smart City Report, which is just filled with all  
422 sorts of wonderful ideas and has enabled Gary McCarthy to be  
423 a national leader in Smart City demonstration projects.

424 I encourage members to check out this report. It offers  
425 many opportunities that, when proven, could be replicable  
426 around the country and will hold a number of type of projects  
427 that are possible to improve energy efficiency, public  
428 safety, and internet access.

429 It's a tremendous report. I thank the mayor for his  
430 leadership and I thank him for being here with the rest of  
431 the panel here this morning.

432 So thank you, Mayor McCarthy, and welcome.

433 Mr. Upton. Well, we are grateful for all the witnesses  
434 today.

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435           We are joined by Brian Slocum, the VP of operations for  
436 ITC Holdings, Jim Ross, the director of International  
437 Brotherhood of Electrical Workers, Brenda Hellyer, chancellor  
438 of San Jacinto College, John Devine, senior VP for HDR, Inc.,  
439 Jennifer Chen -- I think -- is that right, Chen --  
440 sustainable FERC project attorney, Natural Resources  
441 Development Council, and the Honorable Mr. McCarthy, mayor of  
442 Schenectady, New York.

443           We welcome you all. Your statements are made part of  
444 the record in their entirety. Thank you for submitting them  
445 early, and each of you will be given five minutes to  
446 summarize that testimony.

447           And Mr. Mayor, we will start with you. Welcome.

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448 STATEMENTS OF THE HONORABLE GARY MCCARTHY, MAYOR, CITY OF  
449 SCHENECTADY; JOHN DEVINE, SENIOR VICE PRESIDENT, HDR INC.;  
450 BRIAN SLOCUM, VICE PRESIDENT, OPERATIONS, ITC HOLDINGS  
451 CORPORATION; JIM ROSS, DIRECTOR, INTERNATIONAL BROTHERHOOD OF  
452 ELECTRICAL WORKERS CONSTRUCTION AND MAINTENANCE DEPARTMENT;  
453 JENNIFER CHEN, ATTORNEY, SUSTAINABLE FERC PROJECT CLIMATE &  
454 CLEAN ENERGY, NATURAL RESOURCES DEFENSE COUNCIL; BRENDA  
455 HELLYER, CHANCELLOR, SAN JACINTO COLLEGE

456

457 STATEMENT OF MR. MCCARTHY

458 Mr. McCarthy. Chairman Upton, Ranking Member Rush,  
459 distinguished members of the committee and, of course, New  
460 York's 20th District Congressman Tonko, thank you for the  
461 opportunity to appear before you today.

462 While I am the mayor of the city of Schenectady and  
463 serve in the leadership of the New York Conference of Mayors,  
464 I want to make available to you the resources and staff of  
465 the U.S. Conference of Mayors.

466 Under the capable leadership of Conference President New  
467 Orleans' mayor, Mitch Landrieu and Executive Director Tom  
468 Cochran, the conference team is ready and able to assist you  
469 in research, identifying problems and opportunities in the

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470 adoption of a national energy infrastructure policy and the  
471 appropriate budgetary support to ensure the successful  
472 implementation of that policy.

473 We live in an exciting time, one of rapid change, a time  
474 of disruptive technologies, a time of great opportunity. The  
475 city of Schenectady has a long and proud history of  
476 innovation in the creative use of technologies.

477 Congressman Tonko pointed out Thomas Edison founded the  
478 General Electric Company in our city over 125 years ago. The  
479 x-ray was developed in Schenectady.

480 The first television broadcast occurred in the city of  
481 Schenectady. Many of the world-changing products and  
482 technologies we use today have their roots in Schenectady.

483 Today, some of the most valuable real estate in  
484 Schenectady and communities across the country are our light  
485 poles. The conversion of conventional street lights to LED  
486 fixtures is happening everywhere.

487 It makes sense. There is an immediate savings of over  
488 50 percent in electrical costs. But what we are doing in  
489 Schenectady and in some communities across the country is  
490 looking at the opportunity to add additional features.

491 Sensor-based technologies to the light pole when the

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492 conversion to LED fixtures in happening, environmental  
493 sensors measure temperature and precipitation, device-based  
494 utility-grade meters that will allow different owners to  
495 place devices in a light pole and pay for the electricity  
496 that's used just by their device, optical sensor providing  
497 deterrence and documentation for policing, traffic and  
498 pedestrian analytics, dimming controls for additional  
499 electrical savings, acoustical sensors, Wi-Fi, and cellular  
500 communication protocols are just a few of the possible  
501 additions to a standard light pole.

502           These devices will better enable a more cost-effective  
503 delivery of municipal services, the valuable exchange of data  
504 and information, improved educational opportunities within  
505 our city school district, and help with cost containment in  
506 providing health care.

507           Schenectady is partnering with National Grid, our local  
508 utility, in implementing a REV demonstration project in our  
509 city. REV is reforming the energy vision, a program with New  
510 York Governor Cuomo's comprehensive energy strategy to build  
511 a clean and more resilient affordable energy system.

512           We are working with National Grid, GE, AT&T, Cisco,  
513 Presidio, CIMCON Lighting, and other local partners to do a

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514 citywide deployment of Smart City technology as we do the  
515 conversion to LED lights.

516 We hope the National Grid project in Schenectady will  
517 create a replicable model for utilities in other communities  
518 across the state and, hopefully, the country.

519 The ongoing efforts of Schenectady to further invest in  
520 infrastructure by leveraging convergent technologies  
521 including distributive generation resources, intelligence  
522 services, buildings in the electrification of transport will  
523 not only make the city more energy productive, economically  
524 and environmentally sustainable, but will assist New York  
525 State in its individually adopted economy wide target of an  
526 80 percent reduction in greenhouse gas emissions by 2050,  
527 commonly referred to as the 80x50 Program.

528 The 80x50 challenge is a significant goal and will  
529 require fundamental changes, which means that the early cost  
530 savings and sustainable applications of Schenectady and  
531 National Grid's initiatives could serve as a model for other  
532 communities and utilities.

533 This type of project has the potential to transform  
534 communities and has clear implications for the global  
535 competitiveness of this country.

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536           But it's based on a stable and an adaptable electrical  
537           grid. There are many components of the Smart City or Smart  
538           Grid projects that are self-financing. Conversion to LED  
539           light fixtures is a clear example.

540           Some lend themselves to partnerships between utilities,  
541           communities, and companies -- public Wi-Fi in commercial  
542           areas is an example. Others, like the upgrading of utility  
543           resiliency to deal with physical and cyber-attacks, the  
544           possibility of electromagnetic pulses, economic warfare, or  
545           proof of concept for emerging or yet to be developed concepts  
546           or technologies will likely require 100 percent funding from  
547           the federal government.

548           Mr. Chairman, again, I thank you for the opportunity to  
549           be here and look forward to the committee's questions.

550           [The prepared statement of Mr. McCarthy follows:]

551

552           \*\*\*\*\*INSERT 3\*\*\*\*\*

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553 Mr. Upton. Thank you very much.

554 Mr. Devine, welcome.

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555 STATEMENT OF MR. DEVINE

556

557 Mr. Devine. Good morning, Chairman Upton, Ranking  
558 Member Rush, and members of the subcommittee.

559 I am John Devine, a past president of the National  
560 Hydropower Association, and I am here today on behalf of NHA  
561 to share my thoughts about the value and needs of  
562 hydropower's part of this nation's infrastructure.

563 My engineering career spans 45 years focused on water  
564 resources and hydropower, working both in the public and the  
565 private sector. That also makes me part of the aging  
566 infrastructure, I might say.

567 I was also a founding member of a hydropower consulting  
568 firm that started with two people in Portland, Maine, and  
569 grew into a practice with over 250 professionals with offices  
570 in six states. I hope this provides a small example of the  
571 jobs that hydropower can create.

572 I will emphasize three points today. First, investment  
573 in new and existing hydropower projects produces economic  
574 benefits and creates jobs.

575 Second, policies that support hydropower deserve to be  
576 part of any infrastructure package Congress develops, and

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577 third, in order to preserve investment in hydropower, I  
578 believe changes in federal policy, particularly in the  
579 licensing process, will be necessary.

580 So to my point one, investment in hydropower  
581 infrastructure doesn't just create jobs. It creates the kind  
582 of jobs that require skill and education and are therefore  
583 valued, meaning in demand and well paid.

584 We are talking about many field technicians,  
585 electricians, highly-skilled mechanics, biologist,  
586 hydrologists, computer modelers, suppliers of all kind in  
587 virtually every field of engineering.

588 Hydropower is also often a part of -- a cornerstone part  
589 of multipurpose projects that provide water for irrigation  
590 and natural resource protection, water supply for millions of  
591 people, drought mitigation, flood control, and other  
592 benefits.

593 Which leads me to my second point. Ensuring more  
594 investment in hydropower would be -- should be a piece of any  
595 national infrastructure plan. Hydropower is a key part of  
596 the national infrastructure.

597 Just consider the role played by hydropower in pulling  
598 the Northeast and the upper Midwest out of the 2003 blackout

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599 that affected 45 million people in the U.S.

600 Hydropower's black start capability did that, and isn't  
601 that the very definition of important infrastructure?

602 Consider our federal hydropower system. The average federal  
603 hydropower facility is over 50 years old.

604 While this demonstrates reliability and durability, it  
605 also highlights the potential to increase efficiency and add  
606 capacity, therefore, more renewable energy from the same  
607 plant and more jobs.

608 This leads me to my third point. I report to you today  
609 as a practitioner in the field of federal hydropower  
610 licensing. Here is what I can report to you from the field.

611 First, the federal licensing and relicensing process is  
612 broken but maybe not for the reasons that you're thinking.  
613 It's not because of Congress passing the EP Act of 2005.  
614 Congress took a significant step to bring efficiency,  
615 transparency, and accountability to agency decision making.  
616 This committee in particular has done yeoman's service in  
617 support of hydropower.

618 It's not because of FERC. In its promulgation of the  
619 integrated licensing process, FERC made a bold attempt to  
620 bring order, efficiency and better fact-based decision making

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621 to the process.

622 In general, in my opinion, FERC is performing its role  
623 as a neutral arbiter of the facts. So how is it broken? It  
624 is broken today because many federal and state resource  
625 agencies do not adhere to the basic ground rules of the  
626 federal licensing process.

627 Here are three examples that I can share with you.  
628 First, what I am seeing is that all too frequently the  
629 scientific studies conducted as part of the licensing process  
630 are being ignored by resource agencies when the study results  
631 do not comport with the agency's notions of a project's  
632 environmental impacts.

633 This is despite the fact that these studies are  
634 performed for the express purpose of informing development of  
635 license conditions. Such disregard can lead to agency  
636 conditions which are not considered with the available and  
637 therefore are likely not to be effective.

638 Second, state and federal resource agencies'  
639 recommendations for license conditions including mandatory  
640 conditions with FERC -- which FERC cannot balance are often  
641 made without due consideration of their full impacts and are  
642 only focused on narrow agency goals.

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643           Third, in many cases, the federal licensing process can  
644 drag on for years, even a decade or more after the filing of  
645 a complete application, while the applicant waits for the  
646 various federal and state agency decision making processes to  
647 be completed. Together, these provide a very chilling effect  
648 on investment.

649           To conclude, hydropower offers many benefits to society.  
650 IT supports the grid and, as I mentioned, literally keeps  
651 lights on. It integrates other renewable generation.

652           It supports clean air for our communities. These values  
653 are being eroded and U.S. hydropower has much more to offer,  
654 but only if it is given the policy support to unlock its  
655 potential.

656           I thank the subcommittee for allowing me to testify and  
657 I look forward to answering your questions.

658           [The prepared statement of Mr. Devine follows:]

659

660           \*\*\*\*\*INSERT 4\*\*\*\*\*

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661 Mr. Upton. Thank you very much.

662 Mr. Slocum, welcome.

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663 STATEMENT OF MR. SLOCUM

664

665 Mr. Slocum. Thank you, Chairman Upton, Ranking Member  
666 Rush, and the distinguished members of the subcommittee.

667 As you know, my name is Brian Slocum. I am the vice  
668 president of operations for ITC Holdings, Corp., and I  
669 appreciate the opportunity to speak before you today.

670 ITC is the largest independent electricity transmission  
671 company in the country and we own and operate electric  
672 transmission assets that has a footprint that expands to  
673 eight Midwest and Great Plains states.

674 We have no geographic constraints and we invest in the  
675 grid and we do that to improve reliability, to expand access  
676 to markets, and lower the cost of delivered energy to our  
677 customers.

678 We also allow for diverse and new generating resources  
679 to interconnect to our transmission systems. At the  
680 conclusion of today's hearings, I hope to leave the committee  
681 with two very clear takeaways -- first, that investment in  
682 the transmission grid is needed now, and secondly, the  
683 private sector utility industry, which we are a part of, are  
684 ready to make these investments if we are provided with the

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685 right regulatory and planning environment.

686 While there have been some efforts made by the Trump  
687 administration and Congress to reform the existing regulatory  
688 process for electric transmission, additional reforms in  
689 federal permitting and environmental review processes are  
690 needed.

691 We also need to continue to take proactive steps to  
692 reform procedures for planning the transmission system to  
693 ensure that we are examining the full value of the  
694 transmission investments.

695 I would like to highlight the growing importance of  
696 transmission infrastructure to our economy. In the earliest  
697 incarnations of the grid, the transmission lines were built  
698 for a single purpose and that was just to move electricity  
699 from generating plants to homes and businesses. It was  
700 usually within a single utility footprint.

701 Things have certainly involved as FERC and individual  
702 states have opened up electricity markets to competition and  
703 transmission lines became more than just a one-way delivery  
704 system for individual utilities.

705 Today, the transmission grid serves as a non-  
706 discriminatory regional platform for connecting consumers to

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707 energy markets. As customer expectations have increased, so  
708 too have the drivers for new investment in transmission  
709 infrastructure.

710           Whatever the energy future may bring, let's be clear  
711 that we need a modern transmission system to provide the  
712 optionality to facilitate that future.

713           Moving forward, the story is clear as well. Our economy  
714 is becoming more and more dependent on reliable and  
715 affordable access to electricity and the transmission grid  
716 becomes more stressed as that occurs.

717           Planning the grid to address these demands requires  
718 consideration of many complex factors including potential  
719 threats to the system.

720           We now understand that the redundancy that we planned  
721 into the transmission system -- in other words, the different  
722 ways and pathways that we can connect to consumers -- that  
723 offers a pretty strong protection against adverse events that  
724 can impact generation resources or the transmission system  
725 itself.

726           Investing now will ensure the resilience of the grid and  
727 the resource diversity while keeping electricity prices low  
728 for consumers and for businesses.

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729 I would like to emphasize that, theoretically, no  
730 federal dollars are needed to strengthen the grid, increase  
731 resilience, and create jobs.

732 The private sector which we are a part of is ready to  
733 make these investments, provided that regulatory and planning  
734 environment is conducive to the investment.

735 We applaud the efforts by Congress to streamline the  
736 permitting process for new infrastructure. Even still today,  
737 permitting for a major transmission line can take nearly a  
738 decade to secure a range of federal, state, and local  
739 permits.

740 In order to ensure that the NEPA process can be  
741 completed in a reasonable amount of time while maintaining  
742 the strong commitment that we have to environmental  
743 stewardship that we all share this commitment, then Congress  
744 could consider a number of options including requiring  
745 concurrent NEPA analysis and environmental reviews by all the  
746 permitting agencies involved, requiring those agencies to use  
747 the information that's already contained in the lead agency's  
748 NEPA document as the basis for their reviews, and then,  
749 finally, setting some firm deadlines for the NEPA process.

750 To make the necessary investments in transmission

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751 infrastructure that we are ready to do, we need a supportive  
752 regulatory environment and to use the latest and most  
753 comprehensive methodologies to plan and approve new  
754 transmission lines.

755 Planning the grid proactively requires that benefits of  
756 a potential investment be viewed more comprehensively by  
757 integrating a range of project benefits and planning drivers  
758 into criteria for approving projects.

759 Finally, we need also to support the construction of new  
760 transmission lines that connect RTOs and ISOs in various  
761 regions which, as of today, are still highly separated.

762 More interregional connections will increase system  
763 flexibility and resilience against potential threats while  
764 still allowing regional flexibility and approaches to joint  
765 planning.

766 Thank you again for the opportunity to testify before  
767 the committee and I look forward to answering any questions  
768 you might have.

769 [The prepared statement of Mr. Slocum follows:]

770

771 \*\*\*\*\*INSERT 5\*\*\*\*\*

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772 Mr. Upton. Thank you very much.

773 Mr. Ross.



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774 STATEMENT OF MR. ROSS

775

776 Mr. Ross. Thank you.

777 Chairman Upton, Ranking Member Rush, and the members of  
778 the committee, on behalf of our president, Lonnie Stephenson,  
779 thank you for inviting me here today to participate in this  
780 important discussion.

781 Energy generation and power distribution is an \$800  
782 billion a year business. With 775,000 active members and  
783 retirees, the International Brotherhood of Electrical Workers  
784 -- the IBEW -- represents approximately 400,000 workers  
785 employed in generation, transmission, distribution,  
786 construction, and rail jobs all in some way related to the  
787 electrical grid.

788 The IBEW supports a diverse balance and resilient energy  
789 portfolio that includes renewables like wind, solar, and  
790 hydro while preserving key base load energy's sources like  
791 natural gas, coal, nuclear power.

792 These base load power sources are extremely important to  
793 the United States security and vital to future planning. The  
794 need to upgrade is getting its rightful attention these days.

795 But left out of the recent conversation is that the

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796 United States has not made meaningful upgrades to its energy  
797 infrastructure since the 1970s.

798           Unfortunately, our current electric distribution system,  
799 which functions on a regional or localized basis, is outdated  
800 and inefficient and the permitting and approval process for  
801 large-scale transmission projects is more than burdensome.  
802 It's an outright barrier to construction.

803           The large-scale solar installation in the desert of  
804 California, a massive new hydro power generation project in  
805 eastern Canada, and a wind farm in the plains -- these are  
806 major renewable energy development projects the members of  
807 the IBEW have been proud to help construct in recent years.

808           But these generation projects of the future are only as  
809 good as the transmission network they will rely on. Their  
810 value is diminished if there is no infrastructure to take  
811 power from the source to the demand for electricity.

812           New investment in the transmission network is a  
813 necessary component of these renewable energy projects and  
814 the good news is that plans exist and, in some cases, are  
815 years into the necessary permitting and approval stages.

816           In fact, approximately \$140 billion in private capital  
817 is awaiting permit approvals for aging transmission system

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818 overhauls and development of new clean lines to move more  
819 renewable sources to market.

820 One important method of financing infrastructure  
821 projects is through bonds and regulatory decisions can  
822 dramatically impact the bond market.

823 Congress can also play a key role in project financing  
824 by expanding access to private activity bonds. Your support  
825 for legislation that encourages market predictability and  
826 stability will foster job creation.

827 It is also important to support legislation that would  
828 streamline permitting and siting processes. There are plenty  
829 of energy infrastructure projects across the United States  
830 that have been involved in the permitting process for years.

831 An example of a project pending approval is the 192-mile  
832 Northern Pass project which will build high-voltage  
833 transmission lines through New Hampshire, carrying clean  
834 hydropower from Canada to New England.

835 It would create 2,600 jobs during peak construction and  
836 many of these would be skilled IBEW construction linemen.  
837 Recent storms and frigid temperatures have challenged the  
838 ability to the region to meet demand for heating and electric  
839 generation.

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840           As a result, wholesale gas prices spiked more than 10  
841 times the 2017 average price and oil-fueled turbines were  
842 employed, triggering a release of greenhouse gases and  
843 pollutants into the atmosphere.

844           Northern Pass will relieve the massive imbalance of  
845 supply and demand in New England and introduce necessary  
846 renewable diversity into its energy portfolio.

847           Another 750-mile high-voltage clean line project will  
848 deliver 4,000 megawatts of wind-generated power to major load  
849 centers in the Midwest and the East Coast, enough to power  
850 720,000 homes.

851           Both of these projects bring economic and job growth,  
852 preserve local communities, and grow the tax base. A  
853 regulatory resistance from state and local jurisdictions has  
854 effectively stopped them before they could get off the  
855 ground.

856           For this reason, we need to empower federal authorities  
857 to approve large-scale projects of national importance that  
858 cross state lines and local government jurisdictions.

859           With all due respect to local authorities, we need a new  
860 approach that trims unnecessary red tape and streamlines the  
861 rules created by numerous regulatory authorities.

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862           Additionally, the federal government should take  
863           responsibility for right sizing by incentivizing development  
864           of capacity in excess of current market demands.

865           Accounting for future demand avoids the possibility of  
866           under building and encourages future development renewable  
867           electricity sources because there will be a market case to  
868           make to investors, providing that they can move their  
869           generation to major markets.

870           Lastly, we are encouraged by recent one-agency one-  
871           decision proposals which will reduce the time line for  
872           federal environmental reviews and permitting processes.

873           We do not support efforts to diminish current  
874           environmental protections. We simply need an efficient  
875           process. We cannot afford to continue postponing the  
876           necessary upgrades.

877           The United States lags behind China and Brazil, Germany,  
878           and many other countries in transmission infrastructure  
879           investment.

880           With the federal government taking a decision making  
881           lead, market predictability will improve as well as the  
882           IBEW's ability to plan for training the next generation of  
883           construction linemen.

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884           It takes three years to train a journeyman lineman to  
885           perform transmission line construction and maintenance, and  
886           we anticipate the need for approximately 50,000 new power  
887           linemen over the next 10 years.

888           While projects are held up, we are losing valuable  
889           training time. By the way, our privately-operated  
890           apprenticeship training programs invest approximately \$200  
891           million annually to equip students with the skills the  
892           markets demand.

893           For more than 70 years, the IBEW and our employer  
894           partners, the National Electrical Contractors Association,  
895           have been the largest private sector trainer of electrical  
896           workers in the nation.

897           Together, the IBEW and NECA operate hundreds of training  
898           centers in communities across the country. Our training  
899           programs guarantee a steady stream of skilled electrical  
900           workers necessary for the important work of modernizing and  
901           expanding our grid.

902           We ask for your leadership on making our modern  
903           electrical grid a reality. We remain a ready partner with  
904           our employers and elected officials from both sides of the  
905           aisle.

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906 Thank you for the opportunity to testify here before you  
907 today.

908 [The prepared statement of Mr. Ross follows:]

909

910 \*\*\*\*\*INSERT 6\*\*\*\*\*

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911 Mr. Upton. Thank you.

912 Dr. Chen.



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913 STATEMENT OF MS. CHEN

914

915 Ms. Chen. Good morning, Chairman Upton, Ranking Member  
916 Rush, and members of the committee.

917 Thank you for the opportunity to testify. I am Jennifer  
918 Chen, an attorney with the NRDC. I am also a board member  
919 with the Americans for a Clean Energy Grid, a coalition  
920 including transmission owners and developers. We are jointly  
921 working to achieve a modern, efficient, and clean consumer-  
922 friendly transmission grid.

923 NRDC supports a range of infrastructure modernization  
924 projects that deliver economic, social, and environmental  
925 benefits.

926 We support programs promoting energy efficiency and  
927 distributed energy resources, and we need to ensure that  
928 transmission planning counts for them to avoid over building.

929 Today, I will focus my comments on the main barrier to  
930 transmission infrastructure improvements most needed to  
931 modernize the electric grid -- a severely fragmented  
932 transmission planning process and how we can overcome that  
933 barrier.

934 But first, I want to emphasize that environmental laws

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935 are not driving a delay in modernizing our grid and President  
936 Trump's infrastructure plan that would severely undermine  
937 these protections is not the solution.

938 As DOE noted in its quadrennial energy review on energy  
939 infrastructure, the environmental review and permitting  
940 requirements are accomplished effectively and efficiently.  
941 This is due in large part to progress made by Congress in the  
942 Energy Policy Act of 2005 as well as by the last two  
943 administrations.

944 NEPA is only triggered if there is a federal nexus like  
945 when a project receives federal funding. NEPA and federal  
946 permitting requirements are important components for smart  
947 from the start planning.

948 They disclose a project's impact to the public and  
949 provide opportunities for input including alternate  
950 solutions. Early robust public engagement is also key  
951 through reducing conflicts and mitigating impacts.

952 Such input has resulted in better outcomes and  
953 stakeholder engagement helps avoid protracted legal battles,  
954 bad publicity, and protests.

955 On the other hand, President Trump's plan to short  
956 circuit environmental projections and public processes would

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957 be counterproductive because experience has shown that  
958 insufficient public engagement breeds local opposition that  
959 can delay projects.

960 It's far better to fix the disjointed planning process  
961 we can all agree is a barrier to something a wide range of  
962 stakeholders wants. We want our nation's transmission  
963 backbone to be able to deliver clean low-cost electricity  
964 from the windy heartland and sunny states to more densely  
965 populated regions.

966 Importantly, that kind of grid modernization effort will  
967 create jobs, improve the efficiency of our electricity  
968 markets, promotes emissions-free electrification of our  
969 economy that is key to addressing climate change, and produce  
970 billions of dollars in benefits to electricity consumers.

971 The problem is our transmission planning process is too  
972 small scale to produce a robust transmission backbone needed  
973 to accomplish these goals.

974 Currently, interregional transmission planning proposals  
975 are dying on the vine, if proposed at all, far in advance of  
976 the environmental review stage. This is largely due to  
977 mismatched planning between neighboring regions.

978 Smaller regional projects, on the other hand, have seen

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979 more success. FERC tried to facilitate interregional project  
980 development by requiring neighboring grid planners to  
981 coordinate with each other.

982 But that's not the same as requiring them to jointly  
983 plan for transmission because neighboring regions use  
984 different methods in their planning. Asking them to simply  
985 coordinate is not -- has not facilitated these interregional  
986 projects.

987 FERC sought public input in June of 2016 to revisit this  
988 issue but it has not acted on it since. Interregional  
989 planning -- interregional transmission planning, not just  
990 coordination between regions, must be FERC's next priority.

991 As a next step, Congress could encourage FERC to use  
992 existing authority to implement a rule on interregional  
993 transmission planning and to truly modernize the grid,  
994 Congress could encourage FERC to require planning that  
995 anticipates the impact of public policies and the falling  
996 costs of wind and solar power.

997 FERC should also require planning that accounts for  
998 technologies that facilitate environmentally responsible  
999 siting, reduces energy loss along the wires, and maximizes  
1000 the use of existing transmission lines and other

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1001 infrastructure.

1002 Infrastructure is long lived and expensive, but it's an  
1003 investment and it's important to get it right. And to do so,  
1004 it's critical to take steps now to improve the planning  
1005 process.

1006 President Trump's plan to circumvent environmental  
1007 protections would encourage rushing to solve the wrong  
1008 problem.

1009 Thank you, and I look forward to answering your  
1010 questions.

1011 [The prepared statement of Ms. Chen follows:]

1012

1013 \*\*\*\*\*INSERT 7\*\*\*\*\*

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1014 Mr. Upton. Thank you.

1015 Dr. Hellyer.

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1016 STATEMENT OF MS. HELLYER

1017

1018 Ms. Hellyer. Good morning, Chairman Upton, Ranking  
1019 Member Rush, and Vice Chair Olson and members of the  
1020 subcommittee.

1021 My name is Dr. Brenda Hellyer and I am chancellor of San  
1022 Jacinto College, and I am pleased to testify this morning on  
1023 the role that community colleges and San Jacinto College  
1024 specifically can play in contributing to the nation's energy  
1025 infrastructure and developing the workforce and the talent  
1026 pipeline that's necessary to support that infrastructure.

1027 San Jacinto College is located in East Harris County,  
1028 the Gulf Coast region of Texas, and serves approximately  
1029 45,000 credit and non-credit students each year.

1030 Last year, the college was recognized as an Aspen Rising  
1031 Star Award, representing as one of the top five community  
1032 colleges in the country for community college excellence.

1033 We are located in the heart of an energy industry. Our  
1034 service area incorporates the Houston Ship Channel, home to  
1035 the nation's largest petrochemical complex, and we also  
1036 support the NASA Johnson Space Center, Ellington Airport, and  
1037 the Port of Houston, which is ranked number one in U.S. ports

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1038 for foreign tonnage.

1039 In my written testimony, I outline some of the workforce  
1040 challenges in the Houston region. Briefly, Houston's skills  
1041 gap has reached critical proportions among the middle skilled  
1042 jobs -- those that require more education and training than a  
1043 high school diploma but less than a four-year degree.

1044 Of the 3.6 million jobs in Houston, 1.4 million, or  
1045 approximately 40 percent, are middle skills jobs. The best  
1046 way to address this need is through collaboration and  
1047 partnership.

1048 We have taken a national state and regional approach.  
1049 No one entity or group can fix this challenge alone. From a  
1050 regional standpoint, we engage area economic development  
1051 corporations, our school districts, our universities, and our  
1052 industries to build the pipeline for future workers.

1053 We are at the table together, addressing this issue from  
1054 multiple angles. San Jacinto College -- I am going to give  
1055 you some examples of that -- San Jacinto College invites  
1056 6,000 sixth graders each year to gain hands-on experience in  
1057 STEM experiments. This is through an event called Mind  
1058 Trekkers. It's supported and it's sponsored by industry  
1059 partners.



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1060 We offer summer camps to kick-start students so they  
1061 understand the jobs that are available in STEM,  
1062 petrochemical, and maritime.

1063 We also have a speakers' bureau that's a grassroots  
1064 effort -- community colleges, our economic development group,  
1065 and our industry partners going in to our high schools and  
1066 our eighth graders talking about the careers and the jobs in  
1067 our area. Last year, 12,000 students and their parents were  
1068 contacted and spoken with about these jobs.

1069 We partner with industry to understand the types of  
1070 employees they need, the skill sets required, and we adjust  
1071 our curriculum to meet those needs.

1072 To that end, we are building 145,000 square foot center  
1073 for petrochemical energy and technology. This facility is  
1074 being built based on the input from industry. It's for  
1075 industry by industry and it's funded from taxpayer dollars  
1076 and also private donations.

1077 More than a dozen industry leaders serve on a petrochem  
1078 advisory council working directly with me to guide the  
1079 project. This facility will house an exterior glycol unit.  
1080 It'll have programs in process technology, instrumentation,  
1081 electrical, non-destructive testing, the craft trades, and

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1082 it'll also build on our construction management program.

1083 All of the programs will emphasize and build on a safety  
1084 culture. The program will replicate a day in the life of  
1085 plant operators and technicians. The programs are designed  
1086 not only for the new worker coming into the field but also to  
1087 upgrade the skills of the incumbent worker.

1088 Our partnership in providing a skilled energy workforce  
1089 is enhanced through our work with you, the federal  
1090 government. We understand that a well-educated technically  
1091 trained energy workforce is essential to advancing the  
1092 president's America First energy plan and growing the  
1093 nation's energy infrastructure.

1094 To that end, community colleges have been working on the  
1095 development of new legislation for energy workforce training  
1096 Centers of Excellence. Two bills have passed and we  
1097 encourage the enactment on funding of this type of  
1098 legislation.

1099 We also encourage Congress to continue investing in  
1100 America's labor force through grants with the Departments of  
1101 Labor, Education, and Energy.

1102 San Jacinto College is working with the federal  
1103 government to provide workforce training programs through the

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1104 Ready to Act workforce grant, the Carl Perkins Grant, the  
1105 Trade Adjustment Act.

1106 All of these are designed around building that workforce  
1107 and they're critical to the citizens of my region but they're  
1108 also critical to the 1,100 community colleges throughout the  
1109 country that provide the critical workforce training.

1110 While this committee doesn't oversee Pell, I would be  
1111 remiss if I didn't mention the impact of Pell and how that  
1112 really can define how we are going to continue to feed the  
1113 workforce and make sure that we build that workforce.

1114 There's 2.7 million community college students using the  
1115 Pell system, which is building our workforce.

1116 In conclusion, San Jacinto is working collaboratively in  
1117 the Gulf Coast region to increase the number of students  
1118 looking to go into these careers and workforce training,  
1119 STEM, and the fields that really build this infrastructure.

1120 These programs improve the lives across our region. In  
1121 the Gulf Coast region we are actually driving the economy of  
1122 the nation also.

1123 And so I can tell you from San Jacinto's perspective  
1124 this program, how we really are going to help support the  
1125 infrastructure is critical. But it's also critical that we

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1126 have the support for all community colleges.

1127 Thank you.

1128 [The prepared statement of Ms. Hellyer follows:]

1129

1130 \*\*\*\*\*INSERT 8\*\*\*\*\*

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1131 Mr. Upton. Thank you all for your testimony. And this  
1132 point, we'll move to questions from our subcommittee.

1133 Mr. Devine, I appreciate you being here for sure and  
1134 from my perspective I want you to keep your job. I believe  
1135 in an all-of-the-above strategy.

1136 Renewables are a big part of that. In Michigan, we've  
1137 got a minimum mandate. Hydro is part of that. Not as much  
1138 in Michigan as it is particularly in the Northwest, but we --  
1139 as you may know, we have passed with a number of Democrats a  
1140 hydropower licensing bill that moved through this committee  
1141 and has passed in the House now and is waiting for action in  
1142 the Senate.

1143 You talked about the -- a number of hydropower  
1144 facilities that are more than 50 years old. We need to add  
1145 capacity. This is a renewable piece that most of -- most  
1146 Americans would like but with, obviously, no carbon  
1147 emissions, basically, from that source of power.

1148 If our legislation became law, went to the president's  
1149 desk, how would this help the hydropower industry in terms of  
1150 dollars invested in kilowatts generated?

1151 Mr. Devine. Well, Chairman Upton, I think that  
1152 improving the time lines involved in the licensing process

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1153 will reduce some of the perception of the risk in the  
1154 process.

1155 Risk is anathema to investment. So I think those --  
1156 that aligns very well with increasing investment in hydro  
1157 power. There's many opportunities for upgrades and  
1158 improvements and increasing energy at existing hydro power  
1159 facilities and at non-power dams, and I think it's viewed as  
1160 from the -- these have to be financed and the financing is  
1161 susceptible to a risk and reward effects.

1162 So the proposals that increase the efficiency of the  
1163 process and will help in terms of the -- improving the  
1164 overall investment opportunity.

1165 Mr. Upton. So I am one that believes that there ought  
1166 to be an energy title within the infrastructure bill that,  
1167 hopefully, moves through the Congress this year.

1168 Dr. Hellyer, I had -- as you know, the president had  
1169 many of the nation's governors here for the last couple days.  
1170 A whole number of different issues were discussed. One of  
1171 them was infrastructure.

1172 I had the opportunity last night to have dinner with my  
1173 Michigan governor, Rick Snyder. He told me -- he said, "You  
1174 know, if there's one thing you can really do to help create

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1175 jobs and move on infrastructure is to expand Pell to make  
1176 sure that it's involved in community colleges and job  
1177 training."

1178 In my district, we've got two nuclear plants. We've got  
1179 a new LNG plant that they're almost ready to break ground on,  
1180 which will, as I am told, double the tax base for that  
1181 particular community. It's a couple years away from being  
1182 complete but they're ready to break ground, I believe, this  
1183 spring.

1184 As I meet with my IBEW folks, they have a very active  
1185 group in Michiana, as we say -- Indiana and Michigan. I've  
1186 been to a number of their events over the years and they are  
1187 very proud, rightly so, of the work that they do creating the  
1188 jobs, the internships.

1189 I am fascinated with your -- with what's happened in  
1190 Houston and the leading role that you play because I do  
1191 believe that that skills gap and worker training out of be  
1192 part, again, perhaps, of an infrastructure bill creating the  
1193 jobs that we want, knowing that we are going to improve the  
1194 infrastructure across the country.

1195 How do you both see perhaps an expanded role as it  
1196 relates to worker training, working through our community

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1197 colleges which, again, in my view, is so important?

1198           Maybe Mr. Ross, start with you and come back to Dr.  
1199 Hellyer.

1200           Mr. Ross. I mean, I reference to -- I mean, we are  
1201 always looking for skilled craftsmen or top-rated individuals  
1202 that come out of the community colleges because we love  
1203 getting those individuals directly out of the community  
1204 college because that makes our job easier -- transition them  
1205 right into our apprenticeship program.

1206           I mean, at least for linemen it's a three-year program -  
1207 - our inside program for a journeyman wireman like myself is  
1208 a five-year program. So any advanced training they get it  
1209 gives them a leg up on someone trying to apply for our  
1210 program and get in our program.

1211           So we are always -- we work directly with community  
1212 colleges. I know where I am from, from West Virginia, we  
1213 work directly with our community colleges there to get those  
1214 individuals.

1215           I would go out and visit those community colleges  
1216 encourage them to take an application for our program. So we  
1217 work -- I mean, I know throughout the country IBEW always  
1218 works with the community colleges.



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1219 Mr. Upton. And Dr. Hellyer, I would just say we've got  
1220 a great -- we've got a lot of good -- really great community  
1221 colleges in my district.

1222 One of them is Kalamazoo Valley -- KVCC. They actually  
1223 have a wind turbine school training folks and they have jobs  
1224 right away as the graduate.

1225 Ms. Hellyer. So there's a couple of things I think  
1226 could be done. Right now, they're -- the Higher Education  
1227 Reauthorization Act is being looked at.

1228 There's some talks about making it where Pell can be  
1229 used for short-term programs. For us, that could be very  
1230 helpful, especially with programs like commercial truck  
1231 driving that don't qualify right now.

1232 As far as working with IBEW, apprenticeship, programs,  
1233 we do that quite often. I was in Austin yesterday for a  
1234 meeting around a new program in trying to take high school  
1235 students and move them into apprenticeship and going into  
1236 licensing for plumbing, electrical, and one of the comments  
1237 came up how do they use their Pell dollars for that.

1238 So I think there needs to be some more flexibility built  
1239 into the program and because some of these programs are going  
1240 to take longer than what you have Pell dollars available and

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1241 so how do you leverage that.

1242 So you need short-term but then you also need some of  
1243 the long term where students are going out and working and  
1244 then coming back.

1245 Mr. Upton. I know Virginia Foxx would like me to say  
1246 that that looks like additional jurisdiction for this  
1247 committee.

1248 With that, I yield to the ranking member of the  
1249 subcommittee, Mr. Rush.

1250 Mr. Rush. I want to thank you, Mr. Chairman.

1251 Mr. Ross, I really want to commend the IBEW Local 134 in  
1252 my city and my state. They're doing a remarkable job  
1253 rebuilding the -- in terms of a grammar school -- a closed  
1254 grammar school and they're turning that into a union hall --  
1255 really, really nice -- right next to another of our  
1256 vocational high schools.

1257 And so they're in the forefront of really taking CTE  
1258 students and giving them skills and training and I really  
1259 want to commend your union for that. I mean, they're  
1260 wonderful people.

1261 Dr. Hellyer, the city of Houston has a number of  
1262 comprehensive workforce development strategies that includes

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1263 training and in K to 12 levels, community college levels,  
1264 university, and vocational educational levels. This decision  
1265 allows candidates to be trained and developed throughout all  
1266 stages of the educational spectrum.

1267 My workforce development bill attempts to run this model  
1268 to a national level and is aimed at training minorities,  
1269 women, veterans, and unemployed energy workers for good-  
1270 paying jobs and careers.

1271 And then I want to ask -- first of all, I want to  
1272 commend you on your leadership in San Jacinto College and I  
1273 hope that you will work with my office to help make my bill a  
1274 reality as part of a broader infrastructure package.

1275 I think that you have shown tremendous insight into the  
1276 needs of our nation by what you're doing at San Jacinto and I  
1277 also want to commend you. I think that your leadership is  
1278 surely and truly inspirational, notwithstanding the comments  
1279 of my friend Chairman Upton's subcommittee.

1280 Mayor McCarthy, you are on the forefront on trying to  
1281 reconcile the needs and priorities of your constituents with  
1282 the budgetary restraints so many of our states and cities are  
1283 facing.

1284 What are your thoughts on the administration's proposal

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1285 asking states and local municipalities to cover 80 percent of  
1286 new funding for infrastructure projects?

1287 Is this realistic, in your view? Are you concerned with  
1288 the federal government's attempt to shirk its responsibility  
1289 of investing in a serious and meaningful way in our nation's  
1290 aging energy infrastructure?

1291 Mr. McCarthy. Thank you, sir.

1292 I approach it that the 80/20 funding formula that's  
1293 proposed is really over simplistic. There are, again, many  
1294 components that could be financed within the revenue streams  
1295 that exist today.

1296 But some of the emerging technologies are new. You have  
1297 to do the proof of concept. They're going to happen.  
1298 They're happening in other countries. You're seeing things  
1299 in South Korea.

1300 You're seeing things in the Mideast where they're  
1301 developing and deploying technologies faster than we are  
1302 doing here in the United States.

1303 And so how do you build that resiliency into the grid  
1304 and at the same time create a platform that really positions  
1305 not only our communities but the country as a whole to take  
1306 advantage of it and go forward so that you're creating jobs,

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1307 you're creating economic opportunities, and you're improving  
1308 just the quality of life and, hopefully, in your  
1309 deliberations that you will look at those formulas and create  
1310 the regulatory environment that allows things that are self-  
1311 financing to go forward but at the same time look at those  
1312 things that are new and emerging that we need assistance and  
1313 are going to need some subsidy or large amount of financing  
1314 from the federal government to ensure that they're developed,  
1315 deployed, and continue to allow this country to lead in a  
1316 global environment.

1317 Mr. Rush. My second question to you, Mayor, is the  
1318 administration -- under this administration the agencies that  
1319 had been previously preparing plans to increase resilience to  
1320 climatic events for access under their purview are now  
1321 forbidden from even uttering the phrase "climate change,"  
1322 much less preparing for its consequences and its symptoms.

1323 Do you see the need for significant federal investment  
1324 in local energy assurance plans to advance resiliency efforts  
1325 including proposals to combat climatic events? Do you --

1326 Mr. McCarthy. I am sorry. Directed to me again?

1327 Mr. Rush. Yes, sir.

1328 Mr. McCarthy. Climate change is happening. There's

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1329 debate in terms of what's causing that but it's happening.

1330 And so we have to take that into account in terms of public

1331 policy and how do you look to reduce greenhouse gases.

1332 Most of the scenarios that are out there also allow for

1333 cost savings, improved efficiencies, and job creation when

1334 you do the reduction in greenhouse gases so that you're

1335 improving the environment at the same time creating

1336 opportunities for some of these emerging technologies and

1337 emerging skill sets where we have to have a work force -- and

1338 some of the other panellists have talked about -- that are

1339 able to provide these skill sets that we need for products --

1340 services that people demand.

1341 Mr. Rush. I yield back, Mr. Chairman.

1342 Mr. Olson. [Presiding.] The gentleman's time has

1343 expired. The chair now calls upon the chairman of the full

1344 committee from the Beaver State, Mr. Walden, for five

1345 minutes.

1346 The Chairman. I thank the gentleman. As an Oregon

1347 Duck, I don't always refer to it as the Beaver State,

1348 although that is our mascot.

1349 [Laughter.]

1350 So, Mr. Ross, thank you for being here. To all of our

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1351 panellists, again, thank you for your testimony on this very  
1352 important set of issues.

1353 I know I've worked closely with IBEW out in Oregon --  
1354 Local 48 and 659, I think -- and toured the apprentice  
1355 operation there. It's very impressive.

1356 Where's the gap? What do we need to be doing? I know  
1357 we don't directly have that jurisdiction but this is  
1358 important because we can help streamline projects without  
1359 diminishing the environmental piece of this.

1360 We can, you know, do a lot of work here to get pipelines  
1361 and power lines and broadband going. But if we don't have  
1362 the skilled workforce necessary to do the work, we got a  
1363 problem.

1364 So can you talk about your apprenticeship programs and  
1365 where you're at and what we need to be thinking about?

1366 Mr. Ross. Well, we need a lot more, quite frankly. I  
1367 mean, we are doing our level best to try to attract  
1368 individuals into our programs. I mean, for our outside  
1369 program we have approximately 4,600 registered apprentices  
1370 for the line side and around 32,000 for our inside program  
1371 and we certainly could use a lot more.

1372 But what you run into, we are unique in construction and

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1373 most people is familiar -- we work ourselves out of a job.

1374 So we are always looking for the next one.

1375 So good steady work forecasts certainly helps our  
1376 apprenticeship programs, certainly attract individuals into  
1377 our programs but also keeps them working. So it's hard for a  
1378 local union to accept a bunch of apprentices if they don't  
1379 have a place for them to work.

1380 The Chairman. Right. Right.

1381 Mr. Ross. So that's our dilemma. It's kind of a catch-  
1382 22. So we are always looking at the next job, and we  
1383 certainly went through a major recession in 2007 and '08.

1384 The Chairman. Yes, sir.

1385 Mr. Ross. We would call it depression for our industry.

1386 The Chairman. I would, too.

1387 Mr. Ross. I mean, we had tremendous unemployment. Most  
1388 of the locals weren't taking apprentices in because they  
1389 couldn't keep them working.

1390 So we are trying to get caught up because we are in an  
1391 economic boom for construction right. We are having some  
1392 skills shortage. That's why we are working with community  
1393 colleges and different groups trying to get those individuals  
1394 help.



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1395           The Chairman. Yes. I know in the town of my birth, The  
1396 Dalles, there's Columbia Gorge Community College, actually,  
1397 in both Hood River and The Dalles and they had -- they  
1398 started a wind program -- wind energy program a long time  
1399 ago, teaching safety and some of the electrical skills as  
1400 well.

1401           I would like to touch on too when I did a series of town  
1402 halls last spring we got some development underway or  
1403 proposed in Oregon and some who tried to block this sort of  
1404 development ridicule these jobs as temporary jobs.

1405           I heard it a lot at the meeting, and it kind of  
1406 perplexed me because while my wife and I have never  
1407 constructed our own house, I think if we ever did when the  
1408 carpenters were done I wouldn't want them to, like, move into  
1409 one of the bedrooms.

1410           I would want them to move on to the next house. But  
1411 this is an argument and it's an argument on the left, and I  
1412 heard it a lot. Can you speak to those temporary jobs and  
1413 are they not worthy? That's a rhetorical question.

1414           Mr. Ross. It is rhetorical, yes. Like I said, we are  
1415 always looking for the next project no matter how short. I  
1416 mean, there's been times -- I mean, I am an electrician by

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1417 trade, okay.

1418 I just happen to be working in Washington, D.C. now.

1419 But, I mean, I've taken projects that was only supposed to  
1420 last three weeks and be there two and a half years.

1421 So I think it's a pretty sad state of affairs, because  
1422 all our -- all our jobs are temporary in construction. Quite  
1423 frankly, if you didn't work yourself out of a job you  
1424 wouldn't get the next job --

1425 The Chairman. That's right.

1426 Mr. Ross. -- because the idea is to get the job done  
1427 on time and on budget. So --

1428 The Chairman. As you know, we are spending a lot of  
1429 time here trying to streamline the permitting process.  
1430 Again, we get criticized that somehow we are diminishing the  
1431 environmental nature of it. But that's not what we are up  
1432 to.

1433 I have a tiny little community in central Oregon that I  
1434 think spent years trying to get four power poles on BLM land  
1435 -- Bureau of Land Management land -- to go through the  
1436 permitting process, and I know others say, "Oh, it never  
1437 slows you down." It does.

1438 Half of my district -- more than that -- is federal

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1439 land. So we encounter this everywhere we go, and it took  
1440 them three or four years to get these four power poles sited  
1441 so that they could get three-phase power into Mitchell,  
1442 Oregon for the first time.

1443 Do you run into -- these permitting delays?

1444 Mr. Ross. Well, I kind of addressed that in my  
1445 testimony. But yes, we will run into those issues all the  
1446 time. Unfortunately, some of these projects would put a lot  
1447 of people to work.

1448 Most of them have been through the siting permitting  
1449 process and are just sitting there basically to get done but  
1450 being held up through someone on the other side doesn't want  
1451 -- I mean, I get where people don't want a power line in  
1452 their back yard. I get that.

1453 The Chairman. Sure.

1454 Mr. Ross. But in some cases --

1455 The Chairman. They do want the power to come on when  
1456 the switch is thrown, though.

1457 Mr. Ross. Exactly. I mean, the same case -- when  
1458 people's lights go out they want their power back on. They  
1459 don't really care what they look like.

1460 The Chairman. Well, I thank you and I thank all our

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1461 witnesses for your input.

1462 And Mr. Chairman, I yield back.

1463 Mr. Olson. Gentleman's time has expired.

1464 The chair now calls upon the gentleman from the  
1465 thirteenth largest city in California -- Stockton, California  
1466 -- Mr. McNerney, five minutes, sir.

1467 Mr. McNerney. Well, thank you for that little  
1468 statistic, Mr. Chairman, and I thank the panel for coming and  
1469 testifying this morning.

1470 The U.S. clearly needs to modernize our electrical  
1471 infrastructure. The technology exists today to do that. We  
1472 can make our grid resilient and responsive.

1473 We can meet consumer demands that are changing by the  
1474 day. We can meet the demands of intermittent resources,  
1475 physical and cyber-attacks, and the changing weather patterns  
1476 that are brought on by climate change that have brought down  
1477 grid in Puerto Rico, in Texas, in New York, New Jersey, and  
1478 in California.

1479 So we have the resources -- the capabilities to do that  
1480 and, fortunately, my good friend, Bob Latta, and I have  
1481 formed a Grid Innovation Caucus to make people aware of  
1482 what's available and the need to move forward on that. So I

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1483 just wanted to make that clear.

1484 Mr. Devine, I worked on the Hydropower Modernization Act  
1485 and one of the things that struck me was definitely how long  
1486 it took to get permits, how expensive it was to get permits.

1487 Could you say a little bit about how much hydropower we  
1488 could expect if that was improved?

1489 Mr. Devine. I would hate to guess in terms of the total  
1490 amount of capacity involved but it's thousands of megawatts.  
1491 It's very significant.

1492 It's -- as I mentioned to Chairman Upton, the view of  
1493 the risk in the amount of time it takes to improve even  
1494 somewhat straightforward projects is very difficult for  
1495 investors to accept.

1496 So I think there is considerable amount of available  
1497 upgrade potential and power to be added to existing dams that  
1498 have no power and I think it's in -- I think in my testimony  
1499 I reported this as well -- in the thousands of megawatts.

1500 I am working on a project right now where we have an  
1501 upgrade potential of something on the order of -- an existing  
1502 -- an existing station -- something on the order of 20 or 30  
1503 megawatts.

1504 Now, that may not seem large but that's just one station

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1505 in location. That's a significant amount. We are now in our  
1506 seventh or eighth year of licensing. It's not the only  
1507 issue, of course, but this is -- the licensing process can  
1508 hold up these upgrades and these improvements for a  
1509 considerable amount of time.

1510 It's very difficult for the investors to wait that long  
1511 in order to realize a return on that.

1512 Mr. McNerney. Thank you.

1513 Mr. Ross, you mentioned private activity bonds. Could  
1514 you expand on that a little bit? I've done some legislative  
1515 work on that. How important would that be in terms of  
1516 municipal bonds and other tools?

1517 Mr. Ross. I am going to have to take a pass on that one  
1518 and get our political department or someone get you an answer  
1519 to that, okay?

1520 Mr. McNerney. Dr. Chen, you mentioned pretty pointedly  
1521 that we would require regions to coordinate transmission  
1522 planning.

1523 Could you go into that a little bit? I mean, how would  
1524 that -- how would that work? How would that speed up our  
1525 process? How would it make it more easy to put in  
1526 transmission?

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1527 Ms. Chen. All right. So there are two parts to that  
1528 and I appreciate that question.

1529 So first, in the transmission planning process, the  
1530 different regions -- the different ISOs and RTOs plan  
1531 separately and they're required to coordinate by FERC for  
1532 interregional projects.

1533 But, unfortunately, that's not really producing any  
1534 projects. So what we really need to see is a full joint  
1535 interregional planning process.

1536 FERC can use its existing authority to extend order  
1537 number 1000 to require this and Congress could write letters  
1538 to FERC, hold a hearing for FERC to ask how they can move  
1539 forward in that process.

1540 Separately, in terms of siting, especially some of these  
1541 long lines, coordinating between state and federal processes  
1542 as well as locals and other stakeholders -- landowners --  
1543 would be greatly helpful.

1544 We've seen great success and, for example, in the  
1545 Department of Energy and Department of Interior working  
1546 together with the state of California to site 9 megawatts of  
1547 solar in just nine months by coordinating together, doing as  
1548 much of the environmental review concurrently and jointly,

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1549 and that sped things up a lot.

1550           There is a great example about a Midwestern project,  
1551 CapX2020, that I can go into further. But that also  
1552 highlighted -- a University of Minnesota report highlighted a  
1553 lot of successes that arose out of the coordination there as  
1554 well.

1555           Mr. McNerney. Very briefly, does anyone have anything  
1556 to say about ARPA-E? Would that -- the elimination of ARPA-  
1557 E, is that going to set us back in terms of our electrical  
1558 infrastructure development? Anybody on the panel.

1559           Mr. Devine. In terms of the, Congressman McNerney, the  
1560 renewable portfolio standards that you're referring to?

1561           Mr. McNerney. No, ARPA -- that's the advanced renewable  
1562 energy or advanced energy research based on DARPA.

1563           Ms. Chen. Very briefly -- I am sorry -- very briefly, I  
1564 think that would set us back.

1565           Mr. Olson. The gentleman's time has expired. The chair  
1566 now calls upon the gentleman who was the former chairman of  
1567 the full committee, the current vice chairman of the full  
1568 committee and a proud Texas Aggie, Mr. Barton.

1569           Mr. Barton. Well, we thank you, Mr. Chairman. Thank  
1570 you for that introduction.

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1571           This is a difficult hearing for me to kind of get my  
1572 arms around because we are trying to put a government spin,  
1573 apparently, on private sector investment in infrastructure.

1574           I do believe there's a legitimate public interest  
1575 certainly in the permitting and licensing part of these big  
1576 infrastructure projects. We certainly need to protect our  
1577 environment.

1578           And I think you could argue that if you look at public  
1579 sector infrastructure -- highways, bridges, ports -- compare  
1580 it to private sector infrastructure -- pipelines, refineries,  
1581 transmission lines -- the private sector has done a better  
1582 job.

1583           We seem to be more up to date in our private sector  
1584 infrastructure than our public sector infrastructure. So,  
1585 you know, I think while it's important to look at permitting  
1586 reforms and things like that, if it's not broke don't fix it.

1587           I guess one question I have to the mayor of Schenectady  
1588 -- it's always good to have local officials here -- you're  
1589 closer to the problems.

1590           There's been an ongoing problem for decades in the  
1591 Midwest and the Northeast. When you need power, electricity,  
1592 natural gas it's hard to get the permits for the transmission

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1593 lines or the pipelines to get that power or that product to  
1594 your part of the country.

1595 Do you have the solution on how to balance the  
1596 legitimate needs of the state and local government against  
1597 the public good and interstate commerce of getting the  
1598 product from point A to point B if it cross state lines?

1599 Mr. McCarthy. I don't, Congressman.

1600 Mr. Barton. That's an honest answer.

1601 [Laughter.]

1602 Mr. McCarthy. Even though I think the opportunity is  
1603 out there, as you see some of the emerging technologies where  
1604 you had, you know, centralized points of generation and the  
1605 distribution network was, clearly, in one direction that is  
1606 changing.

1607 So where you have solar and wind that are being added to  
1608 it that can provide supplemental points of generation and the  
1609 ability to balance the load so that you don't get the peak  
1610 demand anymore, those will take some of the pressure off the  
1611 need to have the central points of generation at the same  
1612 time will hopefully be able to allow it to be done in a cost-  
1613 effective manner for the consumers who will take advantage of  
1614 some of the newer concepts and products that are out there.

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1615 Mr. Barton. That's actually a very good answer. If you  
1616 eliminate the need to cross the state line, you have solved  
1617 the problem and so more of these alternative energy projects  
1618 that are on site. Those eliminate that need.

1619 But it's -- I think you're still going to need to  
1620 somehow figure out a way to move power from -- or natural gas  
1621 or oil from Texas to New York or Chicago. There are going to  
1622 be occasions where you still need to cross state lines. But  
1623 your solution is --

1624 Mr. McCarthy. And I agree with that. I don't have a  
1625 solution, though, for the regulatory environment or the  
1626 ability to make sure that adequate capacity is there.

1627 Mr. Barton. This last question is a little bit off  
1628 subject but it is -- it is infrastructure related and that's  
1629 who should be the lead and who should pay to protect our  
1630 infrastructure, our power plants and things like that against  
1631 cyber-attacks? So okay, Mr. Slocum, just --

1632 Mr. Slocum. Yes. We own quite a bit of that  
1633 infrastructure and we certainly do a lot to protect  
1634 especially our most critical facilities and our critical  
1635 systems that we use to operate the bulk electric system from  
1636 cyber-attacks.

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1637           So we cover those costs and ultimate those go to our  
1638           ratepayers today. But I do think there is a need for a  
1639           discussion about at what point does that stop for private  
1640           industry and what point does the government help to do that  
1641           in areas where we are getting into even acts of war and  
1642           things of that nature.

1643           So I have a concern that private industry not have to be  
1644           burdened with those costs. But we are certainly ready to  
1645           work together with government to meet those needs and make  
1646           sure their infrastructure is protected.

1647           Mr. Barton. I see my time has expired.

1648           Final question -- are you any kin to the former football  
1649           coach who's my great friend, R.C. Slocum of Texas A&M?

1650           Mr. Slocum. I can't say that I am but it's not the  
1651           first Slocum I've been asked if I am related to. So thanks.

1652           Mr. Barton. Okay. Thank you, Mr. Chairman.

1653           Mr. Olson. Gentleman's time has expired.

1654           The chair now calls upon a friend who rooted against the  
1655           L.A. Dodgers in the World Series and for our Houston Astros,  
1656           Mr. Peters, for five minutes.

1657           Mr. Peters. Thank you. I always enjoy what -- hearing  
1658           what my introduction is going to be, Mr. Chairman. So thank

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1659 you very much.

1660 Thanks for being here. I want to ask Dr. Chen a couple  
1661 questions.

1662 Dr. Chen, I have to say I read your testimony and, you  
1663 know, we hear all the time from businesses and investors that  
1664 regulatory system can cause uncertainty and the length of  
1665 delay can cause projects not to get built or be more  
1666 expensive or result in investors not wanting to take these  
1667 risks.

1668 The citations in your testimony to the Department of  
1669 Energy's own statistics, the Center for American Progress, I  
1670 get -- I mean, I understand that people argue that it isn't a  
1671 problem. But we hear from people who are actually doing the  
1672 investing that it is a problem and I just don't think that we  
1673 do ourselves any favors on this side of the aisle by not  
1674 thinking about what we could do to improve the process to  
1675 achieve high standards and yet do it more quickly in a way  
1676 that's more certain for people.

1677 What happens, I think, when we don't do that is that we  
1678 get the kinds of things that President Trump has proposed,  
1679 which is an evisceration of the regulatory system that  
1680 doesn't get us high standards.

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1681           So I wanted to just ask you about a couple things that  
1682 Mr. Slocum suggested which seem, to me, reasonable and see if  
1683 you have an issue with them.

1684           Could Congress require concurrent NEPA analysis and  
1685 environmental reviews by all permitting agencies? Is there  
1686 an issue you have with that?

1687           Ms. Chen. No. So, certainly, there are a lot of  
1688 provisions in place that enable a joint review so --

1689           Mr. Peters. Could it be required?

1690           Ms. Chen. It could be. I haven't --

1691           Mr. Peters. Okay. How about requiring concurrent NEPA  
1692 analysis -- well, that's the same thing -- requiring  
1693 cooperating agencies to use the information already contained  
1694 in the lead agency's NEPA document as the basis for their  
1695 permit-related reviews?

1696           Ms. Chen. I think it's something to consider. I think  
1697 there are a lot of efficiencies that can be explored. But  
1698 our main issue is eliminating or curtailing environmental  
1699 protections.

1700           Mr. Peters. I understand, too, and I think that's not  
1701 where I want to get to. The other thing is that whether we  
1702 should set a deadline, and I got to tell you I was shocked

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1703 when I got on this committee and heard that hydropower which,  
1704 you know, is, basically, clean base load energy -- takes 10  
1705 years to get a permit for.

1706 And the thing that we learned is something you  
1707 suggested, too, in your references to success stories. In  
1708 the success stories you have these people who are remarkably  
1709 talented and well-motivated to work together and they get it  
1710 done in nine months.

1711 That's a really ad hoc kind of cross-your-fingers  
1712 approach to permitting, I think, because you might not get  
1713 people who are so willing to work together. You might not  
1714 get -- you might get opponents who are more vociferous.

1715 And for me, it would be much more comfortable if we  
1716 could -- if we could find a way to get these decisions made  
1717 in the right way, in a way that protects the environment but  
1718 also gives an answer.

1719 I've always said no is the second best answer. You  
1720 know, let people know. And I do -- I was just actually  
1721 looking at Twitter because there is some down time in these  
1722 hearings, believe it or not, and NRDC is opposing a pipeline  
1723 very vociferously right now on Twitter, and that's fine.

1724 But I just don't think there's any excuse for not

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1725 getting this done in a quicker way. And so I would like to  
1726 work with you.

1727 By the way, you went to the finest law school in the  
1728 United States of America. I would like to work with you, as  
1729 a former alum of the same school, to see if we can't come up  
1730 with better responses to the concern that we are hearing from  
1731 the economy that this permitting process is in the way.

1732 It's getting -- it's too inefficient. I think we can do  
1733 it in a way that's useful.

1734 Mr. Devine, I wanted to ask you, just in case we haven't  
1735 covered it, you said in your testimony that you didn't think  
1736 that Congress was at fault for the length of time it takes to  
1737 do hydropower.

1738 So I want to make sure that -- you tell me if there's  
1739 anything Congress should do to address the situation out  
1740 there.

1741 Mr. Devine. Yes. Thank you, Congressman Peters.

1742 I think there is, definitely. Let me do it by example,  
1743 possibly. So I think what FERC tried to do with the  
1744 integrated licensing process was try to bring some order and  
1745 some efficiency to that process.

1746 It was a collaborative rulemaking process, which meant



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1747 that all of the agencies and all conservation groups and the  
1748 industry was involved in coming up with that process.

1749 And yes, it's still a long process but it's very  
1750 structured and you go through the process and FERC, I think,  
1751 has brought some efficiency to the -- in their effort to  
1752 bring to the federal hydropower licensing process.

1753 The difficulty that we have in the process is you get to  
1754 a certain point and it -- and there are other federal and  
1755 state licensing processes that then interact with that  
1756 process and they don't have any sort of schedule particularly  
1757 and I think the courts have actually said -- I am not an  
1758 attorney -- that FERC is not in a position to force those  
1759 agencies to meet any particular deadlines. So that means  
1760 there is no deadline.

1761 Mr. Peters. So we should look at action-forcing,  
1762 perhaps?

1763 Mr. Devine. Yes, I think so.

1764 Mr. Peters. All right. Thank you. My time has  
1765 expired. I really to appreciate all the witnesses being  
1766 here.

1767 I yield back.

1768 Mr. Olson. Gentleman yields back.

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1769 The chair now calls upon himself for five minutes.

1770 My first question is for you, Dr. Hellyer, and again,  
1771 it's so great to have you here this afternoon. You are the  
1772 best of the best.

1773 As we both know, incredibly, I think kids these days  
1774 still think they have to get a four-year Bachelor's degree to  
1775 be successful in America.

1776 But as San Jac shows, there are incredible opportunities  
1777 and jobs related to American energy and infrastructure for  
1778 kids without a B.A.

1779 Can you please tell me a little about what draws your  
1780 students to your programs and how you're actively in the  
1781 community to raise the profile of energy industry courses?

1782 Ms. Hellyer. Excuse me. I think it comes down to our  
1783 relationship across all the sectors -- with our K through 12  
1784 partners, with our university partners, but mostly with our  
1785 industry partners -- and we tackle that together.

1786 As I mentioned, we bring 6,000 sixth graders onto  
1787 campus. That is based on hands-on experiments so that they  
1788 can be working with industry partners at the table, seeing  
1789 what happens in our petrochem facility, seeing what's  
1790 happening on -- in the maritime industry.

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1791           Then we also reconnect with them again as they're going  
1792 through eighth grade and we give those teachers experiments  
1793 so they can refresh that in the classes.

1794           And in ninth grade, there is the speakers' bureau where  
1795 we are going out into the high schools with, again, industry  
1796 partners talking about the jobs.

1797           We had had many years where we weren't really focussing  
1798 on the jobs in our region, and when you can become a process  
1799 operator making \$100,000 a year with an Associate degree, you  
1800 start to look at that differently -- when you can be a welder  
1801 and making \$75,000 a year.

1802           And so we are really putting that marketing campaign  
1803 together but that marketing campaign is for students, it's  
1804 for parents, and it's also for teachers and counselors in our  
1805 -- in our high schools because they don't necessarily  
1806 understand all the pieces of our region.

1807           But then having industry really engaged in our programs,  
1808 having internships, having apprenticeships where they can get  
1809 hands-on training and then being involved in that interview  
1810 process.

1811           So it's across the board partnerships.

1812           Mr. Olson. I would just ask you to brag. Can you talk

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1813 about how you work with employers and local high schools to  
1814 help students transition into industry?

1815 We've heard some confirm this -- one day in May every  
1816 year some young men and women walks across the stage, gets  
1817 his high school diploma, spins around, puts on a different  
1818 cap and gown and walks by and gets an AA from San Jacinto.

1819 Please explain that success you had with merging the  
1820 education sector with your work there at San Jacinto College.

1821 Ms. Hellyer. So we have eight early college high  
1822 schools and these are early college high schools designed for  
1823 high school students to be earning an Associate degree at the  
1824 same time as they're getting their high school diploma.

1825 So they will actually earn an Associate degree two weeks  
1826 before they graduate from high school, and it's a great  
1827 program. It's an intense program and people say, "Well, how  
1828 are those kids ready?" It's because of the screening  
1829 process. It's because of support systems.

1830 And where do those go to? I can tell you I've had  
1831 students going to Princeton, UT, Penn State -- just all  
1832 across the country they're going to the top colleges after  
1833 they graduate from us.

1834 But we also have a similar program for career and

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1835 technical education. So, again, they're getting their career  
1836 and technical process tech degree or a welding degree so they  
1837 can go into the workforce right away.

1838 So at our graduation the youngest graduate can be 17  
1839 earning an Associate degree and in December the oldest was  
1840 72. So we serve everybody.

1841 Mr. Olson. That includes my alma mater Rice, Mr.  
1842 Flores' alma mater, A&M -- Texas A&M -- is that correct --  
1843 along those litany of UT and other schools?

1844 Ms. Hellyer. Yes. Our top five transfer universities,  
1845 A&M and UT, are right there, and then all the University of  
1846 Houston universities.

1847 Mr. Olson. Thank you.

1848 One question for you, Mr. Slocum. We know that building  
1849 a new transmission line, especially longer ones across the  
1850 state lines or electricity markets is remarkably complex. You  
1851 said a decade, in some cases, in your opening statement.

1852 What is the largest driver for these delays? Is there  
1853 anything Congress can do to make this move faster?

1854 Mr. Slocum. Yes. I would say the largest delays that  
1855 we have -- we have an example of a project between Iowa and  
1856 Wisconsin that we got approval for I believe back in 2011, if

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1857 I have my date correct, and we don't expect to complete that  
1858 project until 2023.

1859 So we plan the project and we stand ready to build the  
1860 project. But it's getting that permitting process done in  
1861 the middle.

1862 And so I agree with a lot of what's been said today,  
1863 that there are ways that we can more efficiently move through  
1864 that process such that we can get to the point where we are  
1865 building the lines, building the projects and those benefits  
1866 are flowing to consumers rather than waiting and going  
1867 through a serial permitting process.

1868 Mr. Olson. Thank you.

1869 One final question for you, Dr. Hellyer. My dear  
1870 colleague, Mr. Green, in his opening statement mentioned I've  
1871 not talked about the Houston Astros, and that's true. I  
1872 didn't do that because I knew you could talk about the  
1873 Houston Astros for me.

1874 [Laughter.]

1875 They went to the World Series in 2005 for the first time  
1876 in the Astros' history. Two star players were on that team -  
1877 - Hall of Famers -- Roger Clemens, Andy Pettitte.

1878 Where did they start playing there all beyond high

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1879 school? What school was that?

1880 Ms. Hellyer. San Jacinto College.

1881 [Laughter.]

1882 Mr. Olson. Thank you. I yield back and yield to the  
1883 gentleman from Texas, Mr. Green, for five minutes.

1884 Mr. Green. Thank you, Mr. Chairman, and I thank you for  
1885 allowing me to testify or to ask questions, rather.

1886 I was shocked because one of the successes of San  
1887 Jacinto College, Andy Pettitte -- a great baseball player but  
1888 he comes back every year and has a great golf tournament that  
1889 supports San Jacinto College. And I am not a very good  
1890 golfer. I haven't had a chance to play but I will at least  
1891 go to the reception.

1892 So but thank you, and thank all our witnesses for being  
1893 here. I have a very urban district in Houston and one of the  
1894 campuses of San Jacinto College is there and I have students  
1895 from our district who go to the other two campuses.

1896 And I just want to thank Dr. Hellyer and the leadership  
1897 both of the board of trustees but over the years at San  
1898 Jacinto College because I was a state senator before I got to  
1899 Congress I saw San Jacinto College doing some of the things  
1900 that are so important today.

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1901           Dr. Hellyer, you can liberate -- can you elaborate on  
1902 the partnership with local industry -- the college heads and  
1903 the Center for Petroleum Energy and Technology?

1904           I am interested in sharing more about how the industry  
1905 guidance towards the curriculum is getting students ready for  
1906 those real jobs today and not just generalized certificates,  
1907 because I've been there and seen that partnership between the  
1908 industry -- the people who hire our constituents and the  
1909 college.

1910           Ms. Hellyer. So one of the things with industry we have  
1911 90 petrochemical plants right there around us and it really  
1912 is how do you partner.

1913           And so I make it very clear I want the good, bad, and  
1914 the ugly around our programs and we are going to fix the bad  
1915 and the ugly, and that's what the conversations are.

1916           And so, for example, our electrical program, as we've  
1917 dug into that, it was too focused on residential. We have  
1918 redesigned it where it has a commercial and industrial phase.  
1919 Industry has come to the table and gotten us almost \$2  
1920 million in donations so that we can really have the program  
1921 that they need.

1922           We have built in the kind of testing they want, the kind



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1923 of components they feel are so critical, the safety  
1924 components, and we are just constantly revising our programs.

1925 One of the things that we needed to do was hire somebody  
1926 from industry to run the program and so we have hired a man  
1927 named Jim Griffin who has been a plant manager or in the  
1928 industry for about 30 years and he's retired to work with us.

1929 He has the respect of industry and he has -- is working  
1930 with us on how we continue to develop and develop our faculty  
1931 around that. It's the same approach we took with our  
1932 maritime programs.

1933 But it really is creating the environment where you're  
1934 having the conversations and then you're responding and  
1935 you're bringing the resources to the table as partners.

1936 Mr. Green. I want to ask a question of Mr. Ross.

1937 Mr. Ross, when I was going to college I didn't play  
1938 football well enough to get a scholarship so I was -- I did  
1939 my apprenticeship as a printer while I was going to school.

1940 Can the IBEW or other trades partner with programs like  
1941 San Jacinto College? How hard is it to get credit for --  
1942 college credit, for example, for what may be the standard  
1943 apprentice program for IBEW or plumbers or pipefitters or  
1944 anything like that?

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1945           Mr. Ross. Well, as I stated earlier we certainly work  
1946 with community colleges in an attempt to try to steal their  
1947 graduates and to get them into our program, definitely.

1948           Second, we also -- our five-year inside apprenticeship  
1949 program we work with community colleges for those individuals  
1950 once they complete our program to get an Associate's degree.

1951           So we work with -- once they graduate they work with the  
1952 community colleges to get their Associate's degree. So they  
1953 -- our program is accredited for -- toward an Associate's  
1954 degree. So that's what we do.

1955           Mr. Green. And I think that's important because most  
1956 folks getting out of high school want to earn a living and  
1957 they may not be able to afford a college and go to college  
1958 and they also may not want to take out loans that -- so they  
1959 could actually get a -- both get a job and do an  
1960 apprenticeship.

1961           And I always remember my third year in my apprenticeship  
1962 I actually started making decent money and -- but and I was  
1963 able to get a business degree.

1964           And, you know, so that's why I would like to see if we  
1965 could structure that with our trades and also our community  
1966 colleges. That's really important in my area in Houston and

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1967 San Jac is part of it.

1968 And I know you're getting competition from some of our  
1969 other community colleges. I am trying to get them to realize  
1970 that trades skills are really important and, frankly, I  
1971 remember when I was graduating from college I had an offer of  
1972 \$600 a month -- 1971 dollars, by the way -- and I explained  
1973 to those companies that offered me that -- I said, "Well, I  
1974 am making \$850 now and so I think I will stay in Houston and  
1975 help manage this printing business."

1976 So but -- so that can be done but we -- mine was just  
1977 lucky. I would like to see it structuralized so whether they  
1978 be in our district or anywhere else they can get that  
1979 training and if they want to go on and get an electrical  
1980 engineer's degree, that's great. But they can at least  
1981 support their families.

1982 So Mr. Chairman, I want to thank you and but -- and you  
1983 and I both are Astros fans and I know we'll be at the White  
1984 House next week.

1985 Mr. Olson. Yes, we will. Gentleman yields back.

1986 The chair now calls upon the gentleman from the  
1987 Commonwealth of Virginia, Mr. Griffith, for five minutes.

1988 Mr. Griffith. Thank you very much, Mr. Chairman, and

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1989 since you always like to talk about sports I would be remiss,  
1990 coming from the Commonwealth of Virginia, if I didn't mention  
1991 the number-one basketball team in the country is UVA.

1992 But we are particularly proud in my district of the fact  
1993 that our Virginia Tech Hokies beat the number-one team a  
1994 couple week back and last night dispatched with the number  
1995 five Duke team. So we are very proud of that.

1996 The district is one that has a lot of assets. We are a  
1997 coal mining district. We have natural gas. Last week, I  
1998 attended a meeting with a solar company in district.

1999 But, Mr. Devine, we also have a lot of water and  
2000 hydropower is an essential component of an all-of-the-above  
2001 strategy, which I have always supported, and I believe should  
2002 be included in any infrastructure package that passes through  
2003 this committee.

2004 I had a bill earlier or last fall -- earlier in the  
2005 session -- H.R. 2880, which streamlines the licensing process  
2006 for the construction of closed-loop pump storage hydropower  
2007 projects.

2008 I see those as giant batteries that are very energy  
2009 efficient. I enjoyed reading your testimony where it talks  
2010 about how hydro is the number-one, quote, unquote, "clean

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2011 energy source in the country," and I was wondering if you  
2012 could explain to folks exactly how closed-loop pump storage  
2013 hydro projects provide to our grid.

2014 Mr. Devine. Thank you. Be a pleasure to do so.

2015 So one of the aspects about pump storage is that it does  
2016 help to bring in and -- bring in other renewable energy  
2017 sources. It helps to regulate the grid in being able to  
2018 incorporate those other renewable energy sources.

2019 The closed-loop part of pump -- basically, what pump  
2020 storage is is that during periods -- historically, during  
2021 periods of high demand an upper reservoir would throw water  
2022 down to the lower reservoir and generate electricity in doing  
2023 that.

2024 And then during periods of lower demand, base load  
2025 stations like nuclear or coal would use energy to pump that  
2026 water back up to use it at a more peak time.

2027 I think the role of pump storage is now changing. It's  
2028 changing significantly, because it's now very critical to  
2029 bring stability to the grid during the -- and incorporating  
2030 the other renewable energy generation opportunities into the  
2031 grid and keeping stability to the grid.

2032 So the closed-loop part of this would be that while some

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2033 pump storage projects are using water from, say, a river  
2034 system that -- in flowing by that would pump up water to the  
2035 upper reservoir and then release it back to the river.

2036 A closed-loop system basically brings water into the  
2037 system for one time and then is just constantly moving that  
2038 water back and forth between the upper and lower reservoir.

2039 It only takes a little bit of water then to make up for  
2040 some evaporation losses. So that closed-loop system, once  
2041 built, basically operates by itself alone without any  
2042 additional water flow or impact to the environment once  
2043 built.

2044 Mr. Griffith. And as a result of that, do you agree  
2045 that that warrants expedited consideration by FERC and with  
2046 some relaxed regulations because we are using the same water  
2047 over and over again so that we don't have as much impact on  
2048 the environment?

2049 Mr. Devine. I do, and one of the main reasons is  
2050 because oftentimes what's indicated to be the primary issue  
2051 with respect to those is the effect of the river, where the  
2052 water is being flowing into and pumping out of -- fishery  
2053 impacts, sediment impacts, other related potential impacts.

2054 With a closed system -- a closed-loop system, once you

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2055 have built and filled these reservoirs and take care of that  
2056 in the original licensing, you don't have that issue --  
2057 potential issue any further.

2058 So I do believe that it deserves that more efficient  
2059 process and expedited licensing process.

2060 Mr. Griffith. And we've been kind of interested in --  
2061 because we hear all the time from folks who oppose coal that,  
2062 you know, you all need to transition, we've been kind of  
2063 interested in maybe putting one of these inside an abandoned  
2064 coal mine because then there's really virtually no impact to  
2065 the environment. Would you agree with that?

2066 Mr. Devine. Yes. I think there's opportunities for --  
2067 with a lower reservoir potentially to be inside old mining  
2068 facilities. I think there have been several of those in the  
2069 past proposed and some actually moved through the -- back in  
2070 the '80s I think it was, or early '90s, move through the  
2071 processing and were not able to get the financing, not able  
2072 to get built at that point but moved through the whole  
2073 process of permitting and were closed-loop systems and using  
2074 old mines for the lower reservoir.

2075 Mr. Griffith. We have a lot of people who are very  
2076 interested in this and anybody that is interested in

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2077 investing in the 9th Congressional District for doing one of  
2078 these we've got plenty of water to put into the system.

2079 Mr. Slocum. I will just quickly mention ITC may be  
2080 interested in that and we do have a project just as --  
2081 exactly what you just mentioned in northwest Arizona that  
2082 we've proposed and we've submitted that to FERC. And so I  
2083 agree with everything that was just said. Thanks.

2084 Mr. Griffith. Thank you, and appreciate it and yield  
2085 back, Mr. Chairman.

2086 Mr. Olson. Gentleman yields back.

2087 The chair now calls upon the gentle lady from Florida,  
2088 who is a huge fan of the chancellor of U of H -- University  
2089 of Houston -- Dr. Renu Khator, just like Dr. Hellyer and  
2090 myself, Ms. Castor, has five minutes.

2091 Ms. Castor. Well, thank you, Mr. Chairman.

2092 I do have great respect for the University of Houston  
2093 Chancellor Dr. Khator and I am sure she was as excited as you  
2094 that her old alma mater, the University of South Florida,  
2095 defeated the University of Houston in women's basketball last  
2096 week.

2097 But thank you for giving me time to be ready with that  
2098 one. I want to thank the witnesses for being here today.

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2099 Many of you have cited in your testimony the importance of  
2100 modernizing America's electrical grid and how that would be a  
2101 very important piece of an infrastructure plan for the  
2102 country, and I agree.

2103 Many of you have cited benefits of modernizing our grid.  
2104 There is creating higher-paying jobs, building in greater  
2105 grid resiliency, greater efficiency for our businesses and  
2106 electric utilities and so much more.

2107 Many of you know that the Democratic colleagues on this  
2108 committee have drafted a piece of legislation called the LIFT  
2109 America Act.

2110 My contribution to the LIFT America Act has been to  
2111 promote a modern grid that includes clean energy distribution  
2112 and really trying to bring the most modern technology that we  
2113 have developed to bear in an infrastructure plan.

2114 I think it's clear that if we were to make a real  
2115 investment in clean, reliable, and cost-effective energy  
2116 resources, we -- the country would reap huge benefits.

2117 Ms. Chen, in your testimony you highlight the importance  
2118 of technological innovations like expanded grid technology,  
2119 smart meters, energy storage as part of upgrading the  
2120 nation's power infrastructure.

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2121 Can you elaborate on that -- on your vision for a more  
2122 modern electrical grid with expanded distribution and greater  
2123 technology and what would we need to build that?

2124 Ms. Chen. Sure. That response -- I probably don't have  
2125 enough time to fully flesh that out. But I think the number-  
2126 one thing to think about here, especially when we talk about  
2127 more clean innovative technologies on the distribution system  
2128 is being able to integrate it with the larger bulk  
2129 transmission grid so that that way whatever savings in  
2130 electricity that you don't have to purchase from the bulk  
2131 electricity system you can reap through, you know, less  
2132 requirements on the transmission grid infrastructure, lower  
2133 requirements on generation infrastructure that could be very  
2134 costly for your consumers.

2135 But at the same time, if you integrate these distributed  
2136 energy resources like storage, demand response, energy  
2137 efficiency, solar panels, you can also allow them to recover  
2138 revenues from the wholesale electricity markets.

2139 So one of the great things that FERC recently did was  
2140 finalize the storage rule that enables storage, at least, to  
2141 compete in the wholesale electricity markets.

2142 What it left behind is the distributed energy resources.

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2143 There's a component to that rule that would have enabled  
2144 those resources to also participate in the wholesale  
2145 electricity markets.

2146 So FERC is going to convene a proceeding to investigate  
2147 it further and we would love to see distributed energy  
2148 resources to be -- to be able to participate in the bulk  
2149 electric transmission system.

2150 So that kind of integrated system would be the overall  
2151 large framework picture that we have for the modern grid.

2152 Ms. Castor. So you would encourage the committee to  
2153 urge FERC to move forward on that along with greater -- I am  
2154 hearing the message from a number of witnesses -- greater  
2155 planning in advance across regions to help save money and  
2156 become more efficient and put all those technological tools  
2157 to use?

2158 Ms. Chen. Right. Absolutely.

2159 So this all goes hand in hand in the transmission  
2160 planning process and the regional operators' load forecasting  
2161 process. They have a lot of planning that goes on.  
2162 Sometimes it's not holistic enough to account for everything  
2163 that's on the distribution system.

2164 So, certainly, including these distributed energy

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2165 resources in those plans would ensure that we don't overbuild  
2166 and, again, it would ensure that if they can participate in  
2167 the markets they could reap some of those revenues.

2168 Ms. Castor. And I just want to close by saying that I  
2169 think there was bipartisan concern that President Trump's  
2170 infrastructure plan, when it was released, it included  
2171 nothing in regard to modernizing America's electrical grid,  
2172 no -- just simply no mention, and I think that was a real  
2173 absence of vision.

2174 Just like the plan included no mention of broadband  
2175 expansion across the country, and I think this committee has  
2176 a responsibility to kind of take up that charge on a  
2177 bipartisan basis with the matters that are in our  
2178 jurisdiction and help lead the way.

2179 We can't do infrastructure and create these high-paying  
2180 jobs and take our country to the next level unless we are --  
2181 infrastructure also means a modern electrical grid and  
2182 greater broadband.

2183 So I yield back my time. Thank you.

2184 Mr. Olson. The gentle lady yields back and the chair  
2185 wishes to inform the gentle lady that she publicly called Dr.  
2186 Khator -- her new home getting defeated by her old home.

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2187 I've sent her a text message about the statement so be  
2188 prepared for a response if it hasn't come already.

2189 The chair now calls upon the gentleman from Indiana, the  
2190 Hoosier State, Mr. Bucshon, for five minutes.

2191 Mr. Bucshon. Thank you, Mr. Chairman.

2192 Earlier this Congress, the House unanimously passed my  
2193 bill, H.R. 2872, the Promoting Hydropower Development at  
2194 Existing Non-powered Dams Act.

2195 H.R. 2872 would promote hydropower development at  
2196 existing non-powered dams by establishing an expedited  
2197 licensing process for qualifying facilities that will result  
2198 in a decision on an application in two years or less.

2199 The bill also requires FERC, the U.S. Army Corps of  
2200 Engineers, and the Department of the Interior to develop a  
2201 list of existing non-powered federal dams that have the  
2202 greatest potential for non-federal hydropower development.

2203 Developing hydropower generation over -- at over 50,000  
2204 suitable dams across the country has the potential to have 12  
2205 gigawatts of clean energy to the grid, create good-paying  
2206 jobs, and bring billions of dollars of investment.

2207 In fact, in the 8th District of Indiana, which I  
2208 represent, there are six suitable dams that can benefit from

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2209 this expedited permitting process.

2210 This legislation modernizes our existing infrastructure  
2211 and I believe should be included in any infrastructure  
2212 package passed out of Congress.

2213 So Mr. Devine, in your testimony you state that enacting  
2214 legislation like this, and you quote, "in a way to move  
2215 investments in hydropower infrastructure forward without  
2216 major cost to the U.S. government."

2217 Can you speak to the impact H.R. 72 and other hydropower  
2218 legislation but specifically this would have on hydropower  
2219 development across the country as well as its role in our  
2220 country's infrastructure?

2221 Mr. Devine. Yes. Thank you, Congressman Bucshon.

2222 I think it's a fine example -- an excellent example of  
2223 trying to improve the investment picture for small hydropower  
2224 and hydropower in the country.

2225 It's also an example of moving forward hydropower at  
2226 existing dams recognizes that the main aspect of these dams  
2227 are usually run-of-river dams.

2228 Run-of-river dams are known to have very minor impacts,  
2229 generally, to the water resources of the -- of the river.  
2230 Therefore, a two-year expedited process in this is not

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2231 incongruent with protecting environmental resources.

2232 I think it's also an example of an expedited process  
2233 which also continues to protect the environment because these  
2234 environmental analyses will be done and completed in a  
2235 reasonable time frame and fully evaluated from the scientific  
2236 perspective.

2237 I think it also combines the expedited time frame for  
2238 the licensing process and is a good example of also -- of not  
2239 trying to rescind any environmental laws or regulations.

2240 I think it's a fine example of encouraging new  
2241 investments in hydropower and recognizing that some of these  
2242 projects have minimal environmental effects and could move  
2243 forward expeditiously.

2244 Mr. Bucshon. Thank you very much.

2245 I just want to point out this bill was passed  
2246 unanimously out of the House with bipartisan support. We  
2247 worked with both parties to develop language that people were  
2248 comfortable with and, again, I want to reiterate that the  
2249 environmental review process is still there in place.

2250 We are just getting federal agencies to move the process  
2251 more quickly rather than 10 years or 12 years to a process  
2252 that would be over a two-year period, which the potential for

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2253 expanding this form of clean energy is tremendous.

2254 And I look forward to our Senate colleagues taking this  
2255 up and I do think there's a lot of interest over there and I  
2256 think in a bipartisan way. I am hoping to get this type of  
2257 legislation to the president's desk.

2258 So thank you very much, Mr. Chairman. I yield back.

2259 Mr. Olson. The gentleman yields back.

2260 The chair now calls upon the pride of Schenectady, New  
2261 York, right behind Thomas Edison, as we learned this morning  
2262 -- Mr. Tonko, for five minutes.

2263 Mr. Tonko. Thank you, Mr. Chair. I think the pride may  
2264 be the mayor of Schenectady. But that's up for discussion.

2265 Mayor, again, I want to thank you for a very  
2266 comprehensive report. It is so innovative and it allows us  
2267 to go into the next stage of energy resources, and I thank  
2268 you, again, for the vision that, obviously, will lead many  
2269 people down a path of sound energy policy.

2270 Schenectady has, I believe, over 5,000 street lights and  
2271 what is considered when a city decides to make a major  
2272 infrastructure investment such as converting to LED  
2273 streetlights?

2274 Mr. McCarthy. Again, there's approximately 5,000 street



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2275 lights in the city of Schenectady, 500 of which the city  
2276 owns. Forty-five hundred, approximately, are owned by the  
2277 utility. So the 500 that the city owns are fairly easy to  
2278 deal with.

2279 Where you get utility-owned streetlights it becomes a  
2280 more complicated process to either buy those or purchase the  
2281 residual value of the fixtures that had been installed and  
2282 that's why we are trying to work with National Grid -- New  
2283 York Public Service Commission to come up with a model that  
2284 would allow that transition to the LED lights.

2285 When you're doing that it's not to miss the opportunity  
2286 to put some of the other available technology on the light  
2287 pole, which will, again hopefully help the utility, help the  
2288 city, then help the residents and businesses within the  
2289 community take advantage of some of the emerging and wireless  
2290 and sensor-based technologies.

2291 Mr. Tonko. So as you convert to LED, what are the  
2292 potential savings for the city when adopting a smart lighting  
2293 system?

2294 Mr. McCarthy. We -- the initial savings -- our number  
2295 is just under \$400,000 -- about half of our electrical costs.

2296 We are looking -- also, when you put the optical sensors

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2297 on the poles that you can then pick up additional savings  
2298 when you dim the lights further when there's less activity on  
2299 the street.

2300 When you put some of the -- either a Wi-Fi or cellular  
2301 communication protocol on the pole it might be able to extend  
2302 that savings to residents or businesses so that your control  
2303 is on the sensor on the street but you would enable  
2304 homeowners or businesses to be able to dim their either porch  
2305 lights or advertising on their buildings or other fixtures  
2306 that they might have when there's no activity -- you could  
2307 dim that.

2308 When there is activity you'd be able to turn them up.  
2309 So it becomes really an integrated deployment where,  
2310 hopefully, everybody will benefit from it.

2311 Mr. Tonko. Tremendous. In addition to lighting,  
2312 Schenectady has developed other clean energy and efficiency  
2313 projects. Amongst them a few years ago the city installed a  
2314 CHP system -- a combined heat and power system -- at the  
2315 wastewater treatment facility and more recently installed a  
2316 solar array, I believe, at that facility.

2317 Mr. McCarthy. Yes.

2318 Mr. Tonko. What are the benefits of these types of

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2319 projects?

2320 Mr. McCarthy. Our wastewater treatment plant, the co-  
2321 gen facility there, saves us approximately \$30,000 a month in  
2322 utility costs, capturing the methane gas and burning it on  
2323 site and then our solar deployment at the time was the  
2324 largest municipal solar array in New York State.

2325 It's done on top of an enclosed reservoir. The Bevis  
2326 Hill Reservoir supplies hydrostatic pressure for the water  
2327 system within the city.

2328 Mr. Tonko. So there's, obviously, long-term benefits  
2329 there to the city with these projects?

2330 Mr. McCarthy. Correct. It was just really unused land  
2331 and so now we get 711 kilowatts of electricity generated  
2332 there that we use a remote metering package to offset the  
2333 costs of some of our higher utility bills of the municipal --  
2334 primarily city hall and some of our fire stations.

2335 Mr. Tonko. Right.

2336 Just make mention here for the record that the city  
2337 established a smart city advisory commission chaired by Mark  
2338 Little, the former chief technology officer and director of  
2339 GE Global Research, which includes businesses and important  
2340 institutions from around the area. So it's really pulling in

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2341 the private sector-public sector partnership.

2342 Back to those public sector partnerships, are there --  
2343 you know, earlier you were quizzed about the 80/20 match  
2344 with, you know, Ranker Rush. But are there opportunities for  
2345 public partnerships at the state and federal level that you  
2346 would encourage?

2347 Mr. McCarthy. I believe everybody has to look at the  
2348 emerging technologies. Things are changing so fast. I was  
2349 here at a NIST event three weeks ago and they talked about  
2350 that 90 percent of the data that exists in the world today  
2351 had been created in the last 36 months.

2352 I went back and used that statistic at an event at our  
2353 community college. Somebody came up to me and corrected me.  
2354 He said, "Mr. Mayor, that's wrong. Ninety percent of the  
2355 data that exists in the world today has been created in,  
2356 roughly, the last 24 months."

2357 So there is so much information out there that, if  
2358 properly managed, it will allow us to do predictive  
2359 analytics.

2360 It will enable us to drive better outcomes, whether it's  
2361 government services, products that are produced in business,  
2362 and educational opportunities within our communities.

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2363 But, again, it's happening so fast that we have to have  
2364 policy standards and an environment that allow those things  
2365 to be fully utilized and taken advantage of in a rapid  
2366 manner. Again, it's really our global competitiveness is a  
2367 key component of that because other countries are moving  
2368 faster in some areas.

2369 Mr. Tonko. Thank you very much, again, for the vision.  
2370 And I agree, the challenge to us now is to determine how we  
2371 utilize the great compilation of data that we acquire.

2372 And with that, Mr. Chair, I yield back.

2373 Mr. Olson. Gentleman's time has expired.

2374 The chair now calls upon the Motorcycle Riders  
2375 Foundation 2017 Legislator of the Year, Mr. Walberg, for five  
2376 minutes.

2377 Mr. Walberg. Wow.

2378 [Laughter.]

2379 Tell you what, always -- always wondering what in the  
2380 world you do to get all of the research done with all of our  
2381 members here. It's impressive, Mr. Chairman. Impressive.

2382 Thanks to the panel for being here. Mr. Ross, I  
2383 certainly appreciate the work the Brotherhood does in  
2384 training people to do jobs whether it's at my Fermi plant --

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2385 the DTE Fermi plant -- or at the -- down Lake Erie a bit at  
2386 the big coal-fired plant or in all of the consumers' power --  
2387 gas-powered plants, et cetera to get the electricity to the  
2388 lines and ITC and others. We appreciate the work you do.

2389 I want to -- I want to ask you to give us some examples,  
2390 if you could, or ideas how we can expand access to  
2391 apprenticeships.

2392 But I would preface it by saying I was greatly excited  
2393 with what our governor was proposing in Michigan last week  
2394 called the Marshall Plan for talent and, specifically, as he  
2395 talked about pushing means towards short-term certification  
2396 programs, education programs, whether it's the community  
2397 college level or apprenticeships, et cetera.

2398 The PROSPER Act that we passed out of the House  
2399 Education and Workforce Committee just a couple months ago  
2400 that reauthorized the Higher Education Act has a one-loan  
2401 one-grant one-work study program that can be done for that  
2402 very purpose -- those Pell grants, et cetera, that can go  
2403 towards short-term training opportunities as well in the  
2404 professional trades, as we are calling now in Michigan.

2405 I know they're skilled but they're professional as well  
2406 and we want to give that idea out to our students that could

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2407 look to fill spots that you have -- that can be an asset to  
2408 what we have.

2409 The SKILLS Act we passed several years ago and was  
2410 signed by President Obama, again, pushed education for real-  
2411 world jobs back to the states and the local communities and  
2412 private entities like yourself. So we want to build on that.

2413 What would be the best way to do this, to expand  
2414 recruiting and apprenticeships for the next generation of  
2415 electric workers as well as how can the U.S. encourage more  
2416 individuals pursue these programs?

2417 Mr. Ross. I think we should start by introducing the  
2418 trades earlier on in school. I mean, when I came through  
2419 school you were introduced in shop class or you had to go to  
2420 electrical class just to introduce individuals to those  
2421 programs, and there's not much vocational training, at least  
2422 I haven't seen much, in the high schools anymore.

2423 They've kind of gone away from that and certainly  
2424 guidance counselors have gotten away from trying to push  
2425 individuals to our industry -- the trades.

2426 Unfortunately, not everyone is cut out for college or  
2427 even community colleges, in some cases. I mean, we take  
2428 individuals with basically a high school education, at a

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2429 minimum, and for an electrician basically high school algebra  
2430 is a bare minimum for us and we train them to be  
2431 electricians.

2432 We certainly need to do a better job of promoting that  
2433 program to individuals out there and, quite frankly, we need  
2434 to do a lot better than what we have been.

2435 And I think reintroducing them in the high schools would  
2436 certainly be a starter -- even earlier in junior high -- to  
2437 get them exposed to what the trades are -- have them hands-  
2438 on. We also have pre-apprenticeship programs out there that  
2439 our electrical training alliance has developed to put  
2440 individuals -- high school graduates into those programs.

2441 It gets them exposed to what's expected of them when  
2442 they become selected as an apprentice. So some of those  
2443 programs we are -- we are trying to promote.

2444 Mr. Walberg. That's great. I mean, the push to  
2445 encourage people toward their sweet spots -- it would be a  
2446 waste of time for some to go the university or four-year  
2447 college route.

2448 We would waste the skills and the talents that they  
2449 have, and if we think about professional skills these are  
2450 jobs like you're talking about that are careers -- that are

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2451 good paying and can continue to expand. I wish you well on  
2452 that. We need the juice.

2453 [Laughter.]

2454 We need the electricity to our homes.

2455 Mr. Slocum, earlier this Congress with the help of this  
2456 committee we passed H.R. 1109. This was legislation that in  
2457 introduced to reduce red tape on both industry and FERC to  
2458 free up resources and lower utility bills. This made a  
2459 simple fix to Section 203 of the Federal Power Act and  
2460 harmonize the language in that particular section.

2461 We know there needs to be serious permitting reform.  
2462 Simple or technical fixes such as 1109 that Congress can pass  
2463 to remove red tape and reduce burdensome paperwork -- other  
2464 low-hanging fruit ideas as well. What would you have to move  
2465 us forward to get past this red tape and bureaucracy?

2466 Mr. Slocum. Thank you, Congressman, and we appreciation  
2467 the work that was done there to make things more efficient  
2468 with respect to that 203 process.

2469 And I think, as mentioned in my testimony, I talk about  
2470 some changes that could be made to the NEPA process that  
2471 seems to have a level of agreement and seems to make some  
2472 straightforward sense as far as making sure that we can get

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2473 through the permitting process in a timely manner but we can  
2474 do that efficiently.

2475 And so that would be one of the biggest things that I  
2476 would see that would be a low-hanging fruit type opportunity.

2477 Mr. Walberg. My time has expired. I yield back.

2478 Mr. Harper. [Presiding.] Gentleman yields back.

2479 The chair will now recognize the gentleman from West  
2480 Virginia, Mr. McKinley, for five minutes.

2481 Mr. McKinley. Thank you, Mr. Chairman.

2482 This now is the thirteenth we've had out of those -- two  
2483 hours ago we heard this is the forty-seventh hearing we've  
2484 had on infrastructure and this is the thirteenth dealing with  
2485 grid resiliency regarding the infrastructure.

2486 We've heard a lot of good solutions over those 47 and,  
2487 clearly -- clearly, we have a growing problem with the  
2488 adequacy of our energy infrastructure and the grid being at  
2489 risk.

2490 But, unfortunately, I can tell you, I am not sure the  
2491 messages are being heard because just a few years ago we had  
2492 with the Polar Vortex we came within just minutes -- just  
2493 minutes of having a blackout through the PJM. PJM was  
2494 reporting that.

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2495           And now ISO is just -- New England has just come out  
2496 with a very well-documented report that says the possibility  
2497 of the power plants in the New England area won't have or be  
2498 able to get the fuel they need to operate and they claim --  
2499 and their quote was, "This is the foremost challenge to a  
2500 reliable power grid in New England."

2501           And then further in the report it says New England has a  
2502 better than 80 percent chance -- 80 percent chance of a  
2503 blackout in the next bad weather storm. But in the meantime,  
2504 New England is becoming increasingly reliant on Russian LNG  
2505 to be able to satisfy their energy demands instead of using  
2506 American energy.

2507           So if we are truly committed as a country for energy  
2508 dominance, what are we doing about it? Are we listening to  
2509 the hearings that have been taking place?

2510           And then one that particularly disturbs me is that New  
2511 England is apparently importing subsidized Canadian  
2512 electricity at the expense of American jobs -- 80 -- or 73  
2513 gigawatts of power coming in from Canada.

2514           I've got to think that the impact of that -- instead of  
2515 having the jobs that we could have as a result of that,  
2516 nearly a hundred coal-fired or nuclear or wind or solar --

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2517 the equivalent of power plants, we could have those in  
2518 America instead of importing from other -- overseas or from  
2519 Canada.

2520 I don't understand why the governments in the New  
2521 England area are withholding permits to be able to build  
2522 pipelines so that we could use America power -- America  
2523 resources to be able to do that.

2524 As a result, we seem to be prematurely closing a lot of  
2525 our coal and nuclear power plants unnecessarily so. So I  
2526 think we have to be careful and I hope that these hearings  
2527 will underscore that because what we've talked about is just  
2528 last -- a couple weeks ago we passed a 45Q, which was a tax  
2529 credit.

2530 We need to give more people the chance to use that 45Q  
2531 to find out if we don't get carbon capture with this tax  
2532 credit that we were able to pass. And then working with  
2533 Congressman Tonko, we keep pushing the efficiency idea with  
2534 turbines. We have capabilities of doing this but it doesn't  
2535 look like Congress -- there's a commitment to do it.

2536 The fuel -- the fuel security is, I believe, a national  
2537 security and that's what these two reports are saying. So is  
2538 government is -- if both sides of the aisle -- if they're

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2539 really serious about all-of-the-above energy resources  
2540 instead of just empty rhetoric, isn't it about time that we  
2541 paint or get off the ladder? Think about that.

2542 So Mr. Ross, I know you're -- you have got a connection  
2543 back to Parkersburg. What's your response to the fact that  
2544 we are importing electricity from Canada rather than creating  
2545 American jobs and using American ingenuity and American  
2546 efficiency and American clean environment?

2547 Mr. Ross. I hate to say too much to our brothers in the  
2548 north because we represent IBEW members out there. So the  
2549 power line I talked about earlier on would be done with IBEW.

2550 So I understand where you're coming from. There's  
2551 plenty of resources here in the United States we can use if  
2552 we could just get the permitting process sped up and create  
2553 the national grid that we need.

2554 Mr. McKinley. Can any of you explain why the grid is  
2555 being held -- or excuse me, the pipelines are being held up  
2556 so that we can use American resources to create American  
2557 jobs?

2558 Mr. Slocum. I will just say I can't speak to pipelines  
2559 but certainly with the electric transmission infrastructure I  
2560 think it's a lack of that interregional planning where you

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2561 can get buy-in to a project and the reasons for the project  
2562 and then from there you can move forward with the permitting  
2563 and get something that's actually an interregional project  
2564 built.

2565           Until you have the impetus behind the project, it  
2566 becomes very difficult to cross state lines, especially  
2567 multiple state lines, where there's going to be winners and  
2568 losers between those two areas unless you have a project that  
2569 has some sort of ultimate approval that's going to proceed  
2570 and move forward.

2571           Mr. McKinley. I know I am running out of -- I know my  
2572 time is over. But I find it just offensive that, according  
2573 to this article -- Bloomberg article that we are importing  
2574 natural gas from Russia instead of using our own supplies,  
2575 especially with all the gas that we have discovered in  
2576 America that makes us such a large producer. I hope that we  
2577 can reverse that.

2578           I yield back.

2579           Mr. Harper. Gentleman yields back.

2580           The chair will now recognize himself for five minutes.  
2581 And Dr. Hellyer, I would like to ask you a few questions and  
2582 certainly you know very well how the energy landscape of the

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2583 United States is constantly changing.

2584 And according to the U.S. Department of Labor, the  
2585 average age of the U.S. energy workforce is over 50 and the  
2586 energy sector will need more than 100,000 new skilled workers  
2587 by 2024 just to replace those retiring workers, and by some  
2588 estimates more than twice as many workers are expected to  
2589 retire as are currently involved in the apprenticeship or  
2590 certificate programs, and degree completion and engineering  
2591 has remained relatively stagnant since the 1980s.

2592 So from your perspective, what incentives are needed to  
2593 expand community college access and apprenticeship programs?

2594 Ms. Hellyer. One of the conversations we had mentioned  
2595 earlier was around Pell, and Pell is an important component  
2596 for all students of higher education, specifically community  
2597 college students.

2598 And there's 2.7 million community college students using  
2599 Pell. From our standpoint and in my community, 75 percent of  
2600 the students are first generation to college. They are --  
2601 about 75 percent are also going part time, and if you dig  
2602 into our ISDs they are about 70 percent economically  
2603 disadvantaged.

2604 And so Pell does play a critical role. I think it's

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2605 what Mr. Ross said earlier also is that awareness around  
2606 those jobs, which is something that we have really done well  
2607 in our region trying to build that awareness much younger and  
2608 then putting that all together and allowing that Pell -- the  
2609 resources to be put in place, the industry partnerships to  
2610 build the apprenticeships.

2611 We have registered approved apprenticeships at San  
2612 Jacinto College and we have unregistered programs and, again,  
2613 designing them based on what the industry partner needs but  
2614 realizing that it's a combination that's going to be needed.

2615 Mr. Harper. So how do you communicate to these students  
2616 that these are the types of jobs in the energy and  
2617 manufacturing sector that they can have a good life, support  
2618 their family on? How is that communication made to the  
2619 students?

2620 Ms. Hellyer. So it becomes -- in our region what we are  
2621 doing is first we are engaging in sixth graders around --  
2622 bringing them onto campus and seeing hands-on around what  
2623 happens in our petrochemical plants, what's happening in the  
2624 maritime industry so having that hands-on, reengaging them  
2625 again in eighth grade.

2626 In eighth grade in Texas, students decide an endorsement



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2627 -- an area of study -- and so we are engaged with them around  
2628 that process. Again, how does this tie back to the jobs in  
2629 our community, and then we also have a speakers bureau, which  
2630 is led by industry with community colleges going in to the  
2631 eighth grade and then the high schools.

2632 Those conversations are directed at parents, teachers,  
2633 counselors, and students. You need that broad awareness and,  
2634 to be honest, just as Mr. Ross said, there hadn't been that  
2635 kind of awareness in our communities for a lot of years and  
2636 so we are building that pipeline.

2637 But when you can talk that a process operator will make  
2638 \$100,000 or a welder \$70,000 with the proper credentials,  
2639 that starts speaking.

2640 And those students need to hear it from people that are  
2641 younger than me. They need to hear it from, you know, people  
2642 who went to their high school and that are reengaging and  
2643 that's what industry has done.

2644 They bring in those people working in their plants back  
2645 into the high schools where they can get a role model and  
2646 then get their questions answered. And then it's us putting  
2647 in place the support systems at the college -- having  
2648 industry partners at the table, being real clear what the

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2649 expectations are, defining, you know, how's the safety  
2650 culture built in -- what's the work ethic and reinforcing  
2651 that in all your programs. Our industry partners at the  
2652 table with us are the critical factors.

2653 Mr. Harper. That's great. You know, what we -- what we  
2654 observed is students just by nature, when they're in high  
2655 school, the earliest time that they are able to opt out of  
2656 math and science classes they try to do that and get it done  
2657 and then you lose those skills.

2658 So are you seeing any connection with that to where  
2659 you're seeing more and more students maintain the STEM  
2660 curriculum in high school so they don't opt out of those  
2661 possible job opportunities?

2662 Ms. Hellyer. So, again, it's working with our high  
2663 schools and with the industries but also with the  
2664 universities because some of those jobs do require university  
2665 and so how do you have that pipeline.

2666 And then for us in the higher education we can redesign  
2667 math a little bit. We are not directing all students to  
2668 college algebra.

2669 If you're moving in to a business degree you're doing  
2670 more statistics. If you are going into process technology

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2671 it's more of a technical math and showing how that reinforces  
2672 with what you're going to do -- welding, more geometry. And  
2673 so we try to redefine some of that.

2674 We take the same approach with English. Our operators  
2675 need English. They need the math skills. They need more of  
2676 a technical English and so how do you redesign that and being  
2677 very prescriptive again, take math early, take the sciences  
2678 early because it does reinforce the rest of the courses in  
2679 your degree program.

2680 Mr. Harper. Thank you, all of you, for being here.  
2681 It's provided a lot of important insight to the committee.  
2682 And seeing that there are no further members wishing to ask  
2683 questions I would like to thank all of our witnesses again  
2684 for taking the time to be here today.

2685 Before we conclude, I would like to ask unanimous  
2686 consent to submit the following letters for the record --  
2687 one, the Utilities Technology Council letter, and the second  
2688 is the American Public Gas Association.

2689 [The information follows:]

2690

2691 \*\*\*\*\*COMMITTEE INSERT 9\*\*\*\*\*

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2692 Mr. Harper. Without objection, those are so entered and  
2693 I will ask if Mr. Rush has any similar documents.

2694 Mr. Rush. Mr. Chairman -- yes, I have a -- I would ask  
2695 the unanimous consent to enter into the record different  
2696 letters, one from the Center for American Progress, these are  
2697 statements, one, and the American -- the Center for American  
2698 Progress has a statement debunking the false claims of the  
2699 environmental review component.

2700 Additionally, there's the Center for American Progress  
2701 statement on Trump's infrastructure scam that will gut the  
2702 environmental protection to benefit corporate polluters.

2703 And we have a series of others -- BlueGreen Alliance  
2704 entitled, "The Right Way to Repair America's Infrastructure"  
2705 -- the Earth Justice statement, which is entitled, "Congress  
2706 Should Support an Infrastructure Plan that Builds  
2707 Infrastructure, Not Gut Health and Environmental Protection."

2708 And lastly, a New York Times article that's entitled,  
2709 "Trump's Infrastructure Plan Puts the Burden on State  
2710 Environment Money."

2711 [The information follows:]

2712

2713 \*\*\*\*\*COMMITTEE INSERT 10\*\*\*\*\*

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2714 Mr. Harper. Without objection.

2715 Pursuant to committee rules, I remind members that they  
2716 have 10 business days to submit additional questions for the  
2717 record and I ask that witnesses submit their response within  
2718 10 business days upon receipt of the questions.

2719 Without objection, the subcommittee is adjourned.

2720 [Whereupon, at 12:24 p.m., the committee was adjourned.]