

NEAL R. GROSS & CO., INC.

RPTS MORRISON

HIF198160

REALIZING THE BENEFITS OF RURAL BROADBAND:

CHALLENGES AND SOLUTIONS

TUESDAY, JULY 17, 2018

House of Representatives

Subcommittee on Communications and

Technology

Committee on Energy and Commerce

Washington, D.C.

The subcommittee met, pursuant to call, at 10:00 a.m., in Room 2123 Rayburn House Office Building, Hon. Marsha Blackburn [chairman of the subcommittee] presiding.

Members present: Representatives Blackburn, Lance, Shimkus, Latta, Guthrie, Olson, Kinzinger, Bilirakis, Johnson, Long, Flores, Brooks, Collins, Cramer, Walters, Costello, Walden (ex officio), Doyle, Welch, Loeb sack, Ruiz, Dingell, Eshoo, Butterfield, Matsui, McNerney, and Pallone (ex officio).

Staff present: Jon Adame, Policy Coordinator,

26 Communications and Technology; Kristine Fargotstein, Detailee,  
27 Communications and Technology; Sean Farrell, Professional Staff  
28 Member, Communications and Technology; Margaret Tucker Fogarty,  
29 Staff Assistant; Theresa Gambo, Human Resources/Office  
30 Administrator; Elena Hernandez, Press Secretary; Paul Jackson,  
31 Professional Staff, Digital Commerce and Consumer Protection;  
32 Tim Kurth, Deputy Chief Counsel, Communications and Technology;  
33 Lauren McCarty, Counsel, Communications and Technology; Brannon  
34 Rains, Staff Assistant; Austin Stonebraker, Press Assistant; Evan  
35 Viau, Legislative Clerk, Communications and Technology; Michelle  
36 Ash, Minority Chief Counsel, Digital Commerce and Consumer  
37 Protection; Jeff Carroll, Minority Staff Director; Jennifer  
38 Epperson, Minority FCC Detailee; Alex Hoehn-Saric, Minority Chief  
39 Counsel, Communications and Technology; Jerry Leverich, Minority  
40 Counsel; Jourdan Lewis, Minority Staff Assistant; Dan Miller,  
41 Minority Policy Analyst; and C.J. Young, Minority Press  
42 Secretary.

43 Mrs. Blackburn. [presiding] The Subcommittee on  
44 Communications and Technology will now come to order, and the  
45 Chair recognizes herself for 5 minutes for an opening statement.

46 And I want to welcome you to today's subcommittee hearing  
47 on rural broadband challenges and solutions. Extending the reach  
48 of broadband in rural Tennessee and across America is critical  
49 to ensure that everyone can participate in the digital economy.

50 While the percentage of rural Tennesseans still lacking access  
51 to high-speed internet has decreased from 34 percent to 23  
52 percent, we have to continue to push. You can't have a 21st  
53 century economy without a 21st century internet.

54 Since passage of the 1996 Telecom Act, the private sector  
55 has invested roughly \$1.6 trillion in their networks using  
56 different technologies. Understanding different technologies  
57 is key because broadband is more than just fiber. Moreover, we  
58 should acknowledge private investment in rural deployment and  
59 ensure that government-based solutions complement private  
60 investment instead of competing with it. For example, I am  
61 pleased to have the Satellite Industry Association testifying,  
62 so we can learn about the strides they are making to deploy modern  
63 satellites capable of delivering broadband internet anywhere in  
64 the country.

65 Almost six months ago, I chaired a hearing on closing the  
66 digital divide. These hearings are useful, but, as chairman,  
67 I like to focus on results. Today's hearing allows us to check

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

68 our progress, finding solutions and getting work done.

69 I am proud to report that members of this subcommittee have  
70 worked together and accomplished quite a bit when it comes to  
71 expanding broadband access in rural America. In March, Congress  
72 passed RAY BAUM's Act, the most significant rural broadband  
73 legislation to become law in the last six years. The bill is  
74 named in honor of the E&C Committee Staff Director Ray Baum, who  
75 passed away earlier this year. Ray was a champion for rural  
76 America, and naming this bill for him is a fitting tribute.

77 RAY BAUM's Act incorporated several legislative proposals  
78 we examined at our hearing in January. I will allow subcommittee  
79 members to discuss the legislative solutions, but I would like  
80 to highlight a couple that positively impact the people of  
81 Tennessee and Americans everywhere.

82 Ms. Eshoo and Mr. McKinley took the reins on the broadband  
83 conduits, the idea that the Department of Transportation should  
84 facilitate broadband infrastructure on highway projects that use  
85 federal dollars. I am pleased that we could work with Ms. Eshoo,  
86 who had this great idea, common sense, and we finally got it done.

87 Mr. Kinzinger and Mr. Loeb sack worked together to require  
88 the FCC to study the potential of using spectrum more efficiently  
89 for rural areas.

90 Lastly, our full committee chairman, Greg Walden, took on  
91 the difficult issue of ensuring the solvency of the Broadcast  
92 Relocation Fund. Wireless broadband providers spent over \$19.8

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

93 billion at auction for TV spectrum. Ensuring the solvency of  
94 the Relocation Fund is crucial to getting this spectrum to use  
95 for broadband, especially in rural areas.

96 After passage of RAY BAUM's Act, the subcommittee passed  
97 two more rural broadband bills, the Precision Agriculture  
98 Connectivity Act from Mr. Latta and Mr. Loeb sack, the ACCESS  
99 BROADBAND Act from Mr. Tonko and Mr. Lance. These bills were  
100 reported out of full committee last week. All of this shows that  
101 Congress can, in fact, roll up our sleeves and get things done.

102 Rural broadband remains a challenge and there are still  
103 unserved areas that need to be connected. With limited federal  
104 dollars to go around, we simply cannot afford to allow  
105 overbuilding to take place while so many areas are left completely  
106 unserved. We need to encourage states to find solutions that  
107 best suit their needs. We will not stop working, and I am proud  
108 to lead this subcommittee in working with the President to find  
109 good bipartisan solutions.

110 I yield the balance of my time to Mr. Lance.

111 Mr. Lance. Thank you, Chairman Blackburn.

112 I have introduced the AIRWAVES Act with Ranking Member Doyle  
113 which, among other things, would help spur rural broadband  
114 deployment by dedicating 10 percent of spectrum auction proceeds  
115 under the bill to rural broadband. Had this rural dividend been  
116 in place during the previous two spectrum auctions, over \$6  
117 billion would have been raised for rural buildout. I think that

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

118 it is incredibly important that rural America be treated the same  
119 way as the rest of America.

120 It is also important that we recognize that any federal funds  
121 for broadband deployment will be finite. I have worked hard to  
122 pursue policies to ensure coordination between various agencies.

123 Mr. Chairman, I ask unanimous consent to introduce a  
124 coalition letter of support for the AIRWAVES Act, and it includes  
125 the African-American Mayors Association, the American Library  
126 Association, the National Black Chamber of Commerce, and the  
127 Taxpayer Protection Alliance.

128 Mrs. Blackburn. Without objection, so ordered.

129 [The information follows:]

130

131 \*\*\*\*\* COMMITTEE INSERT 1\*\*\*\*\*

132 Mr. Lance. And I yield back the balance of my time.

133 Mrs. Blackburn. The gentleman yields back.

134 At this time, I recognize Mr. Doyle for 5 minutes.

135 Mr. Doyle. Thank you, Madam Chair.

136 Before I get started, I want to express my deepest  
137 condolences to Robin Colwell, the majority's chief counsel, on  
138 the passing of her husband Bill. I know Robin and her family  
139 are grieving their loss, but our thoughts and prayers are with  
140 her and her family.

141 Madam Chair, thank you for holding this hearing.

142 We live in a divided nation when it comes to broadband access.

143 All too often, people living in urban areas are the digital haves;  
144 whereas, those living in rural areas are being left behind with  
145 few or no choices, higher prices, and lower speeds.

146 As I and many of our colleagues have said in the past, if  
147 we are going to bring more broadband to rural America, our  
148 government needs to make a sustained investment in building out  
149 more infrastructure. That is why I am proud to support Ranking  
150 Member Pallone's LIFT America Act, which would dedicate \$40  
151 billion to building out broadband infrastructure in the unserved  
152 and underserved parts of the country. We also need to give  
153 communities like Pinetops the freedom and flexibility to  
154 provision their own service. That is why I am proud to continue  
155 to support Ms. Eshoo's Community Broadband Act. Ms. Coker Craig,  
156 reading your testimony, reiterates exactly what this is such an

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

157 important option for rural communities.

158 I am also proud to have introduced the AIRWAVES Act with  
159 Mr. Lance. This bill directs the FCC to conduct a number of  
160 spectrum auctions as well as to make significant amounts of new  
161 unlicensed spectrum available. The bill would set aside a  
162 portion of the revenue from those auctions for the deployment  
163 of new wireless broadband infrastructure in unserved and  
164 underserved parts of rural America.

165 Mr. Aiken discusses in his testimony a number of the bands  
166 in the bill which would be ideal for buildout of broadband in  
167 rural areas, specifically the Citizens Broadband Radio Service,  
168 or CBRS, and the lower C-band. It is important to keep in mind  
169 that these bands could be structured in a way that would enhance  
170 rural broadband deployment, but they don't have to be. The  
171 Commission is currently considering changes to both these bands.

172 The CBRS band was envisioned as a model for an innovative  
173 new spectrum licensing system that would cover smaller areas than  
174 traditional cellular licenses. This licensing model was  
175 supported by a broad range of industries, including rural  
176 broadband providers who see tremendous potential in being able  
177 to access smaller, more affordable blocks of license spectrum.

178 But the Commission is considering changes to this band that would  
179 drastically increase license sizes, crowding out smaller players,  
180 so that only the largest wireless providers could bid on these  
181 licenses.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)



182           The Commission also opened up a proceeding on the lower  
183 C-band. Several satellite companies that operate in this band  
184 have proposed making a portion of the band available for mobile  
185 broadband, which is great, but I agree with Mr. Aiken that this  
186 band has a lot more potential. The rest of the band could be  
187 shared between satellite operators and broadband providers using  
188 fixed wireless service. This proposal has the potential to  
189 greatly expand broadband deployment in rural parts of the country.

190           In both of these bands, the Commission has before it two  
191 roads. They can work to make as much spectrum available for  
192 mobile broadband services. At the last hearing we had on that  
193 topic, every witness acknowledged 5G would not solve rural urban  
194 broadband divide. Or the FCC can adopt spectrum policies that  
195 bring broadband to all Americans. I think it is important for  
196 members on this subcommittee to realize that these are the  
197 decisions that the Commission is making right now that could  
198 affect the future of broadband in rural communities.

199           With that, Madam Chair, I want to yield the remainder of  
200 my time to Mr. Butterfield.

201           Mr. Butterfield. Thank you very much, Mr. Doyle, for  
202 yielding time this morning.

203           And thank all of the witnesses for their testimony.

204           Madam Chairman, one of the privileges extended to members  
205 of this committee is to introduce their constituents when the  
206 committee invites them to testify. So, you can imagine my

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

207 surprise when I learned that the committee had extended an  
208 invitation to one of my constituents from the town of Pinetops,  
209 North Carolina, population 1300, to serve as a witness for today's  
210 hearing on rural broadband.

211 The town is a small, rural community located in my district  
212 in Edgecombe County. The town, with a population of 1300,  
213 comprises an area of about one square mile. In fact, I was in  
214 the town on Saturday night. I pass through there quite often.

215 I stopped at Abrams Bar-B-Q, and former Sheriff James Knight  
216 was there. And he bought me a plate of barbeque, slaw, and hush  
217 puppies just this past Saturday night.

218 Pinetops, Madam Chairman, is home to my constituent Suzanne  
219 Coker Craig, who accepted the committee's invitation to testify.

220 Ms. Craig and her husband Doug are small business owners in the  
221 town. Before starting her business in 2010 that continues to  
222 grow, Ms. Craig was Director of Advocacy Programs for the North  
223 Carolina Hospital Association. She served as Pinetops' Town  
224 Commissioner from 2009 to 2017, played a key role in securing  
225 high-speed internet service for the constituents in the town.

226 And so, I am proud to welcome Suzanne to the committee. Suzanne  
227 will share her experience of living in an extremely rural  
228 community and the challenges that she and others face when not  
229 connected to the digital world.

230 Thank you for yielding this time, Madam Chairman and Mr.  
231 Doyle. At this time, I will yield back.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

232 Mrs. Blackburn. The gentleman yields back.

233 At this time, I recognize Mr. Walden, chairman of the full  
234 committee, for 5 minutes for an opening.

235 The Chairman. Thank you, Madam Chair, and I want to thank  
236 my colleagues, and certainly our panelists, for being here today.

237 Mr. Butterfield, we would have thought we would get to sample  
238 some of that fine barbeque. Yes, okay, we got that on the record.

239 I want to welcome our witnesses, as I said, and I really  
240 appreciate your being here. Particularly, I want to thank my  
241 constituent, Ms. Jenni Word from the Wallowa Memorial Hospital,  
242 for coming here all the way from Wallowa County. She is there  
243 in Enterprise, a population of 1,916 people, and the county, with  
244 6800 people, spans 3,152 square miles. So, this is big, wide-open  
245 country, beautiful mountain ranges, and forests and farmland.

246 It is tucked in the far northeast corner of Oregon. It is larger  
247 than the state of Delaware and very rugged and remote.

248 I have worked over the years with the health center there  
249 and the hospital and others on their efforts to build out fiber  
250 and get really good connectivity. We recently worked together  
251 with the FCC. Chairman Ajit Pai was in Oregon just after he  
252 announced he was raising the cap on the FCC's Rural Health Care  
253 Program. This really helps the folks to allow a county healthcare  
254 district and other rural providers to get affordable broadband  
255 service.

256 Ms. Word will detail the telehealth opportunities that

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

257 broadband access has opened up, and, most importantly, expanding  
258 the care patients can receive locally without having to travel  
259 hours to other hospitals. This is certainly of huge benefit in  
260 a place where, as a county commissioner once told me, Susan  
261 Roberts, it is winter 11 months out of the year and sometimes  
262 it snows in August. And that is true.

263         Telemedicine, however, is only one example of the  
264 opportunities provided by broadband access in our rural  
265 communities all across America. Eastern Oregon University, Blue  
266 Mountain Community College, and others, are taking advantage of  
267 distance learning to expand access to higher education in isolated  
268 communities. Farmers and ranchers across America, and certainly  
269 in my district, are using precision agriculture more and more  
270 to regulate their inputs, and the transition to Next Gen 911 is  
271 critical for strengthening public policy.

272         After all, broadband is the infrastructure investment of  
273 the 21st century. Broadband means jobs, and jobs come from  
274 deployment of broadband, including towers and cell sites, fiber,  
275 launching satellites, upgrading facilities that constitute the  
276 physical infrastructure.

277         And the economic benefits don't stop at that infrastructure  
278 investment. Maintaining this infrastructure requires  
279 high-skilled jobs in engineering, network management,  
280 cybersecurity, advertising, customer service, and much more.  
281 Beyond all that, we know broadband is a force multiplier for job

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

282 creation and providing efficiencies for every sector of the  
283 economy.

284 Our Chair ran through some of the bills, including the RAY  
285 BAUM's Act, but the Chair herself deserves credit for spearheading  
286 the overall effort. This legislation, now law, included many  
287 provisions to improve broadband buildout.

288 Spectrum auctions, for example, raise billions of dollars  
289 in federal revenue for deficit reduction and other investments,  
290 but a quirk in the law prevented the FCC from taking upfront  
291 payments of auction bidders and depositing the money directly  
292 with the U.S. Treasury. Though spectrum is the lifeblood of  
293 wireless broadband, this effectively stopped the FCC from  
294 conducting further spectrum auctions.

295 So, this committee, and under the Chair's leadership, took  
296 care of that in the RAY BAUM's Act. RAY BAUM's Act fixed this  
297 by including a bipartisan bill from Mr. Guthrie and Ms. Matsui  
298 that allows the FCC to deposit legally upfront payments directly  
299 with the Treasury. As a result, the FCC is now moving forward  
300 with its upcoming spectrum frontiers auction, which will make  
301 more high band spectrum available for 5G.

302 RAY BAUM's Act, signed into law March 23rd, as you have heard,  
303 I have a feeling the bill's namesake Ray, who was from eastern  
304 Oregon and actually represented Wallowa and Union Counties in  
305 the state legislature, and called them God's country, would be  
306 very proud of our efforts then and now.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

While some may have been content with that accomplishment that we did earlier this year, this subcommittee continues to process important bills through regular order. And just last week, the full committee took up four more bills that were unanimously approved by this subcommittee. So, these bipartisan bills include Mr. Tonko and Mr. Lance's ACCESS BROADBAND Act, which is an important and necessary step to coordinate funding for broadband across different agencies. We also passed Mr. Latta and Mr. Loeb'sack's Precision Agriculture Connectivity Act, which requires the FCC and the U.S. Department of Agriculture to form a task force to evaluate the best ways to leverage broadband for modern high-tech farming and ranching. These bills illustrate what we can accomplish when we work together, as we do often, on a bipartisan basis.

However, other Members have put forward bills to address rural broadband challenges, and these proposals will deserve our attention and consideration as well. And I expect we will hear about some of those today and we will continue to work on those.

I look forward to this hearing as a followup to our January hearing on closing the digital divide and the numerous other infrastructure-related hearings we have conducted this Congress.

So, we have got more work to do to improve access and for telehealth, precision agriculture, education, and jobs across America.

But I want to thank Ms. Word for being here today. We really

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

332 appreciate your coming out. I look forward to your testimony.

333 I will say in advance we have another hearing going on at  
334 the same time, so I will be bouncing back and forth. But we have  
335 the testimony from all of you and we appreciate your input.

336 With that, Ms. Chair, I yield back the balance of my time.

337 Mrs. Blackburn. The gentleman yields back.

338 Mr. Pallone, you are recognized for 5 minutes.

339 Mr. Pallone. Thank you, Madam Chair.

340 From the start of the Trump administration, there has been  
341 a bipartisan call to modernize America's infrastructure,  
342 including expanding broadband to communities that need it, and  
343 this takes significant resources and cannot be done simply through  
344 deregulation or streamlining processes. Actual investments are  
345 needed, and we must see states and local governments as partners,  
346 not adversaries.

347 Committee Democrats recognize the need for real investment  
348 and to develop legislative proposals to build the modern,  
349 resilient infrastructure that Americans need and deserve.  
350 First, the LIFT America Act will authorize this \$40 billion in  
351 grants for the deployment of secure and resilient broadband.  
352 This comprehensive infrastructure bill, which is supported by  
353 every Democrat on this committee, will also invest in drinking  
354 water infrastructure, energy infrastructure, healthcare  
355 infrastructure, and brownfields redevelopment. These  
356 investments will make Americans more competitive, safer,

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

357 healthier, and connected.

358         Second, Mr. Lujan, along with a number of other Democrats  
359 on the committee, introduced the Broadband Infrastructure Finance  
360 and Innovation Act. This bill would authorize \$5 billion worth  
361 of secured loans, loan guarantees, and lines of credit to finance  
362 public/private partnerships for broadband deployment.

363         Third, Mr. Tonko has introduced the ACCESS BROADBAND Act,  
364 which was just reported by this committee to the full House of  
365 Representatives last week. This bill would create an Office of  
366 Internet Connectivity and Growth to help ensure we are using  
367 existing broadband programs and new ones to get the most bang  
368 for the buck. I urge my colleagues to bring this bill to the  
369 House Floor as soon as possible.

370         Committee Democrats have also put forward many other  
371 innovative solutions that could make a real change in connecting  
372 the unconnected and opening up our airwaves for new wireless  
373 broadband services. Unfortunately, the administration and my  
374 Republican colleagues have placed infrastructure legislation on  
375 the back burner behind its tax scam that benefits large  
376 corporations and the wealthiest few. Rather than making real and  
377 substantial investments in our nation's crumbling  
378 infrastructure, they, instead, choose to throw billions of  
379 dollars in tax credits at the wealthy who simply do not need them.

380         So, I think we need to invest in broadband infrastructure,  
381 particularly in rural and urban communities that have been left

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)



382 behind. According to the FCC, 30 percent of Americans in rural  
383 areas and 35 percent of Americans living on tribal lands lack  
384 access to baseline broadband service, and this is based on mapping  
385 data that we know underreports the scope of the problem.

386 So, it is time to act. Democrats have bold proposals that  
387 will actually drive broadband deployment in all 50 states. These  
388 proposals are technologically-neutral and open the door to all  
389 internet service providers that can deliver fast and secure  
390 broadband access. We need to think outside the box in our effort  
391 to connect all Americans to the benefits of the internet. I look  
392 forward to hearing from our witnesses on how we can ensure access  
393 to high-speed broadband throughout America, including rural  
394 communities.

395 On a brief personal note, if I could just say I was incredibly  
396 saddened to hear that Robin Colwell of the subcommittee's majority  
397 staff lost her husband Bill over the weekend following his battle  
398 with cancer. I want to offer our deepest condolences from the  
399 Democratic side and sympathies to her and her family in this trying  
400 time.

401 I yield back, Madam Chair.

402 Mrs. Blackburn. The gentleman yields back. No one is  
403 seeking to claim his time.

404 We appreciate so much the thoughts and condolences for Robin.  
405 We know that you all wish Robin and her girls well during this  
406 sad time.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

407           This concludes our member opening statements. The Chair  
408 would like to remind members that, pursuant to the committee  
409 rules, all members' opening statements will be made a part of  
410 the record.

411           Mrs. Blackburn. We want to thank all of our witnesses for  
412 being here today and taking the time to accept the invitation  
413 and come before the subcommittee. Today's witnesses will have  
414 the opportunity to give their opening statements, followed by  
415 a round of questions.

416           Our panel for today's hearing will include Mr. Tom Stroup,  
417 President of the Satellite Industry Association; Mr. Justin  
418 Forde, Senior Director of Government Relations at Midco; Mr.  
419 Claude Aiken, President and CEO of the Wireless Internet Service  
420 Providers Association; Mr. John May, President of Ag Solutions  
421 and the Chief Information Officer at John Deere & Company; Ms.  
422 Jenni Word, Associate Administrator and Chief Nursing Officer  
423 at Wallowa Memorial Hospital in Oregon, and Ms. Suzanne Coker  
424 Craig, a former Commissioner of the town of Pinetops and the  
425 current Managing Partner at CuriosiTeens of Pinetops.

426           We appreciate each of you being here today, and we appreciate  
427 your testimony.

428           We will begin with you, Mr. Stroup, 5 minutes for your opening  
429 statement.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

STATEMENTS OF TOM STROUP, PRESIDENT, SATELLITE INDUSTRY  
ASSOCIATION; JUSTINE FORDE, SENIOR DIRECTOR OF GOVERNMENT  
RELATIONS, MIDCO; CLAUDE AIKEN, PRESIDENT AND CEO, WIRELESS  
INTERNET SERVICE PROVIDERS ASSOCIATION; JOHN C. MAY, PRESIDENT,  
AG SOLUTIONS, AND CHIEF INFORMATION OFFICER, JOHN DEERE & COMPANY;  
JENNI WORD, ASSOCIATE ADMINISTRATOR AND CHIEF NURSING OFFICER,  
WALLOWA MEMORIAL HOSPITAL, AND SUZANNE COKER CRAIG, A FORMER  
COMMISSIONER OF THE TOWN OF PINETOPS AND MANAGING PARTNER,  
CURIOSITEES OF PINETOPS

STATEMENT OF TOM STROUP

Mr. Stroup. Chairman Blackburn, Ranking Member Doyle, and  
distinguished members of the subcommittee, thank you for having  
me testify here today.

I am Tom Stroup, President of the Satellite Industry  
Association.

Satellite communication services are positioned to be the  
keystone for bringing 21st century broadband capabilities to the  
entirety of the United States. These services are capable of  
providing broadband to rural and remote areas of the country,  
where it remains uneconomical for terrestrial services to deploy,  
and both provide speeds and prices comparable to terrestrial  
alternatives. These services are available directly to the  
consumer today, covering all 50 states and delivering broadband  
offerings up to 100 megabits per second.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

Satellite broadband is also used by business and government enterprises for both fixed and mobile purposes, using a range of spectral bands to deliver assured access to broadband communications. Further, satellites are providing critical backhaul internet connectivity to local internet service providers and community institutions in remote locations. Today, approximately 2 million customers nationwide are enjoying high-quality satellite broadband services at reasonable rates and at speeds that meet and exceed the FCC's definition of broadband service.

The satellite industry is investing tens of billions of dollars to innovate and increase broadband connectivity to the U.S. and across the globe. High-throughput satellites, for example, rely on frequency reuse and spot-beam technology to produce increased output factors upward of 20 times that of traditional satellites.

The industry has seen similar increases in the capacity of its systems. The first broadband satellite began service in 2008 with a capacity of 10 gigabits per second. Today's satellites have capacities of up to 260 gigabits per second, a number expected to increase to 1,000 gigabits per second by the end of the decade.

These terabit-capacity geostationary satellites will provide orders of magnitude capacity increases.

In another highly anticipated advancement in the industry, thousands of new, high-throughput, non-geostationary satellites

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

will soon join existing operators in low-earth and medium-earth orbits to provide additional high-speed broadband at low latency levels. Indeed, prototypes of these satellites have already begun to launch.

As Congress develops its broadband policies, it should consider the many positive attributes of satellite broadband.

These include, No. 1, competition. Just as it has with radio and television services in the past, satellite services provide market-based competition to terrestrial broadband services. Satellite broadband brings additional package options, pricing, and innovative services to consumers, often in areas with only a single or small number of providers.

No. 2, wide geographic coverage. To address the digital divide, broadband services need to be available for the most rural and remote areas of the country. The nature of satellite's wide coverage ensures that all communities within the satellite's footprint receive the same quality of service, whether they are remote communities or big cities. Public policymakers should leverage terrestrial-style incentives with satellite's geographically-independent cost structure to achieve universal communication services.

No. 3, availability. Unlike terrestrial service, satellite broadband is available today across a significant portion of the country without the buildout of additional infrastructure. Customers can obtain satellite broadband services by simply

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

505 ordering and awaiting at-home installation.

506       No. 4, cost efficiency. Because satellite systems have  
507 inherently wide area coverage, when technology-neutral  
508 incentives are made to encourage capacity redirection, there is  
509 no additional cost to build out to rural and remote areas, only  
510 lost opportunity costs in more lucrative service areas. This  
511 is unlike terrestrial services, where the low density of rural  
512 and remote areas makes it costlier and in most cases not  
513 economically viable to build out and cover these areas.

514       And, 5, reliability. Natural and manmade disasters can  
515 interrupt terrestrial broadband services. Satellites, however,  
516 are less affected by these events, and satellite ground systems  
517 or satellite-enabled airborne equipment can be quickly deployed  
518 to restore connectivity.

519       Of course, all of the breakthroughs we have seen because  
520 of satellite technologies should not be taken for granted. They  
521 depend upon our industry's ability to access spectrum. In order  
522 for our industry to sustain and meet the growing demand for  
523 satellite services, we encourage regulators to continue to  
524 allocate sufficient spectrum for satellite use and to support  
525 the national broadband mapping system as to provide a clear and  
526 complete map of broadband services.

527       Thank you, and I look forward to your questions.

528       [The prepared statement of Mr. Stroup follows:]

529

530

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

531 Mrs. Blackburn. The gentleman yields back.

532 Mr. Forde, you are recognized, 5 minutes.



STATEMENT OF JUSTIN FORDE

Mr. Forde. Chairman Blackburn, Ranking Member Doyle, and members of the subcommittee, thank you for inviting me here today to discuss the challenges we face and the solutions we are working on to bring the benefits of broadband to rural America.

My name is Justin Forde, and I am the Senior Director of Government Relations for Midco. Midco is the leading provider of internet and networking, cable TV, phone, data center, home security, and advertising services in the Upper Midwest. We serve more than 385,000 residential and business customers in South Dakota, North Dakota, Minnesota, Kansas, and Wisconsin in communities ranging in size from less than 100 people to more than 180,000.

Midco has a history of innovation in the Upper Midwest that continues to motivate our business today. In 2017, we launched the Midco Gig Initiative, a commitment to bring gigabit internet speeds to our entire service area. We have invested over \$56 million in the Gig Initiative over and above the millions of dollars we invest in our network annually. Today, Midco Gig is available to more than 80 percent of our customers, with more communities to come in 2018.

We are also focused on expanding our service to more cities and more communities across the region, but there are challenges and high costs associated with building fiber in our area of the

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

country. While thinking about a creative solution to this challenge, we were contacted by the rural community of Brooktree Park, North Dakota, to help them obtain broadband access. We quickly determined that bringing wireline service to the area was not economically feasible, but we partnered with InvisiMax, a fixed wireless provider, and we were able to offer broadband service to that area within 30 days.

Recognizing the potential of the fixed wireless solution to provide broadband to more rural residents, Midco has acquired InvisiMax, and we have begun to expand fixed broadband wireless with service more broadly in rural areas within our footprint.

Fixed wireless allows us to reach areas that are up to 50 miles away from our fiber network, and we can implement that solution relatively quickly without the expense of constructing fiber networks.

We can use fixed wireless to offer internet where the terrain can make it difficult, if not impossible, to provide wire internet, such as the Badlands of North and South Dakota, the granite fields of northern Minnesota, or the limestone cliffs in eastern Minnesota. We can also reach vast areas of farmland where it is not economically feasible to run fiber to every single acre. We can deploy new fixed wireless during the winter months, when difficult winters make new fiber construction impossible.

I, myself, am a Midco fixed wireless customer. I get my internet from the top of a grain elevator in Prosper, North Dakota,

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

583 to my small farmstead 6 miles west of Argusville, North Dakota.

584 On a normal day, my three kids are streaming video or other  
585 content while my wife is using the internet to run a small  
586 business. This service has been a great asset to our family.

587 Even today, it allows me to keep an eye on the farm from  
588 Washington, D.C., through a video and security systems enabled  
589 by fixed wireless.

590 Midco supports your hard work to ensure that all Americans  
591 have access to broadband services. We greatly appreciate the  
592 bipartisan commitment of this committee to produce bills that  
593 nurture a broadband-deployment-friendly atmosphere. Your  
594 efforts on the RAY BAUM's Act and the MOBILE NOW Act to include  
595 broadband deployment provisions like the dig-once policy and a  
596 spectrum policy bouncing licensed and unlicensed uses, your  
597 thoughtful consideration of the ACCESS BROADBAND Act, have  
598 contributed to an environment in which we are more able to easily  
599 invest, expand, and deploy.

600 Today, I would like to offer two suggestions for how you  
601 might help us further advance the reach of broadband networks.

602 First, in some cases, government help is needed to bring  
603 broadband access to areas it is not financially viable to build.

604 In the past, some broadband funding programs have allowed funds  
605 to be uses in places that already have broadband service. We  
606 were encouraged to see the pilot funding program in the Omnibus  
607 Appropriations Act and in the Senate farm bill that both seek

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

to limit funding to areas that need it most. We ask your support efforts to keep broadband funding dollars to unserved areas.

Second, to serve the greatest number of rural residents via fixed wireless, we must have the ability to purchase spectrum.

We need more wide channels and spectrum bands where we receive interference protection, and we must have a fair ability to compete for access to any spectrum that is open and appropriate for fixed wireless service.

Congress should support the FCC in its effort to expand the categories of eligible uses for certain underutilized spectrum bands, like 2.5 gigahertz, and support the FCC in adopting smaller license sizes and appropriate auction rules for bands that have potential for fixed wireless in rural areas. These actions will help all Americans, including those in rural America, to receive the full potential of America's broadband networks.

Thank you again for inviting me here today, and I look forward to working with all of you on these important issues.

[The prepared statement of Mr. Forde follows:]

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

627 Mrs. Blackburn. The gentleman yields back.

628 Mr. Aiken, you are recognized.

629 STATEMENT OF CLAUDE AIKEN

630

631 Mr. Aiken. Good morning, Chairman Blackburn, Ranking  
632 Member Doyle, and members of the subcommittee.

633 I am Claude Aiken, President and CEO of WISPA, the Wireless  
634 Internet Service Providers Association, representing more than  
635 800 small businesses who are closing the digital divide in rural  
636 America. I am honored to offer our perspective on how fixed  
637 wireless broadband is making a difference in rural America.

638 The majority of our members got their start the same way.

639 They were bootstrapping entrepreneurs who saw the need for better  
640 broadband in their communities and answered the call. Whether  
641 it was via maxed-out personal credit cards, small loans from  
642 family members, or putting their life savings on the line, our  
643 members have built workable, cost-efficient, local networks and  
644 given their neighbors what they never had before, high-speed  
645 broadband internet.

646 Our members use whatever spectrum is available, unlicensed,  
647 lightly licensed, or licensed spectrum. They lease whatever  
648 infrastructure is available to hang radios. It may be commercial  
649 towers, local water towers, or a neighbor's grain silo or barn.

650 They transmit internet data, often over many miles, to small  
651 fixed receivers on their customer's premises, and they provide  
652 high-speed, low-latency, uncapped broadband, typically in the  
653 range of 5 to 50 megabits per second, and speeds of up to 1 gigabit

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

654 per second are possible with current technology.

655 Our members are overwhelmingly small, local, rural  
656 providers. More than half have fewer than 1,000 customers.  
657 Almost three-quarters have fewer than 10 employees. But, despite  
658 their small size, they are making a difference, serving more than  
659 4 million people across our nation, and the majority do this  
660 without any government subsidies.

661 Most importantly, WISPs can deploy fixed wireless service  
662 to residential consumers at about one-seventh the cost of fiber  
663 and one-fourth the cost of cable. That is right, we can deploy  
664 broadband for a fraction of the cost of fiber and cable, and we  
665 can deploy much more quickly, usually in months, rather than  
666 years.

667 Clearly, we are a significant part of the solution. So,  
668 how can we in D.C. help unleash the power of fixed wireless  
669 economics to better serve your communities? The most important  
670 thing the subcommittee can do is to support more flexible, shared,  
671 and lightly licensed use of underutilized spectrum bands. Our  
672 members are often frustrated that they have potential customers  
673 within range of their towers, but insufficient spectrum to serve  
674 them, all the while licensed spectrum in their areas goes unused.

675 Thankfully, this subcommittee has been a part of the  
676 solution. We commend your work to lower barriers to  
677 infrastructure deployment, streamline regulations, and widen the  
678 spectrum pipeline. Legislation like the AIRWAVES Act and the

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

679 ACCESS BROADBAND Act will make a difference in rural America.

680 WISPA also commends the FCC for moving forward on rulemaking  
681 proceedings that could and should make more spectrum available  
682 for rural broadband deployment. The FCC is at a critical juncture  
683 on one proceeding that I will briefly highlight, the ongoing  
684 Citizens Broadband Radio Service, or CBRS, proceeding. It is  
685 no exaggeration to say that this proceeding is vitally important  
686 to the future of rural broadband.

687 In 2015, the FCC adopted innovative rules that would have  
688 auctioned seven 10-megahertz spectrum licenses in blocks the size  
689 of Census tracts, about 4,000 people each. But, last summer,  
690 the FCC reopened the rule seeking comment on greatly enlarging  
691 the license areas, up to the size of a partial economic area which  
692 generally contain both urban and rural areas and often cross state  
693 lines.

694 For our members, enlarging the license areas would be like  
695 requiring an entrepreneur who wants to open a kiosk to purchase  
696 an entire shopping mall. Our members need the FCC to keep the  
697 existing unlicensed or GAA spectrum allocation intact and retain  
698 small, Census-tract-sized licenses in the CBRS band. This would  
699 increase auction participation and revenues and enable our  
700 members, and all kinds of entrepreneurs and innovators, to  
701 participate in the auction, not just our largest companies.

702 And here's another reason why balanced spectrum policy is  
703 so important. If rural service can be deployed at much lower

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)



cost by fixed wireless providers, there is much less need for doling out subsidies to large carriers to offset their much higher costs. For example, ZIRKEL Wireless in Colorado is serving areas with one person per square mile without any government subsidies.

With the right spectrum policy, access to private capital will become easier for small providers, and broadband deployment in rural and small town America will accelerate.

To the extent subsidiaries are necessary, they should be made available in a technology-neutral and a provider-neutral manner. Too often, small WISPs find themselves overbuilt by providers receiving state or federal subsidies. We need to work together to find solutions that will prevent small companies that have invested private capital from facing competition from large companies backed with government subsidies, grants, and loans.

Madam Chairman, our members are closing the rural broadband gap without subsidies, and we call on you to help modernize and rebalance U.S. spectrum policy, so that we can reach even more Americans in underserved areas.

We thank you for the opportunity to testify, and I look forward to your questions.

[The prepared statement of Mr. Aiken follows:]

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

727 Mrs. Blackburn. The gentleman yields back.

728 Mr. May, you are recognized.

STATEMENT OF JOHN MAY

Mr. May. Chairman Blackburn and Ranking Member Doyle, thank you for the opportunity to be here today and speak about rural broadband, a very important issue for many farmers and others in the agricultural sector.

My company, John Deere, is the global leader in manufacture of agricultural, construction, turf, and forestry equipment. For 181 years, Deere has been helping farmers get more production from their fields in an efficient and sustainable manner. Technology, a big part of agriculture and the John Deere story, is the key to helping farmers meet the world's needs for food and agricultural goods in the future. And having access to broadband internet services is absolutely essential to leveraging the benefits that technology has to offer.

The evolution of technology in agriculture is critical. That is because global demand for agricultural output, which has more than tripled since 1960, shows no signs of easing. Given forecasts of global population growth and dietary improvements, farm output will need to roughly double from 2000 levels to meet the projected demand in 2050. What's more, these output gain will need to take place with essentially the same amount of land and water, and probably less labor. By and large, the technologies needed to produce these gains depend on the delivery of reliable internet connections to farmers in the field,

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

754 something many farmers can't count on today.

755       The extent of the broadband access problem in agriculture  
756 is hard to measure in exact terms, but we know anecdotally it  
757 is a significant issue. Based on the rate of successful  
758 connections between our John Deere customers and our data  
759 management platforms, we know there are many instances where  
760 producers cannot fully leverage the benefits of their data on  
761 account of nonexistent or unreliable internet service. This is  
762 to say nothing about connections that are never made or even  
763 attempted by those who lack internet service and don't bother  
764 to invest in the technologies in the first place.

765       The nature and the extent of the problem is exactly why we  
766 believe federal policy and programs should give more  
767 consideration to the needs of farmers and ranchers. Without a  
768 better understanding of the problem, we can't begin to design  
769 the right solution.

770       John Deere commends the Energy and Commerce Committee's  
771 approval of H.R. 4881, the Precision Agricultural Connectivity  
772 Act. Along with our partners in the Agricultural Broadband  
773 Coalition, John Deere endorsed the bill. We see it as an  
774 important first step to addressing agricultural broadband issues.

775       We are hopeful this legislation will be enacted this year, either  
776 as part of the farm bill or on its own.

777       We also believe federal agencies with broadband deployment  
778 mandates should view access through an expanded lens, one that

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

incorporates a geographic and functional usage metric, as opposed to looking only at population centers. In our view, broadband access on active cropland should be included as a metric for identifying areas where broadband infrastructure investment is most needed.

Cell towers are for the time being the key for delivering high-speed LTE terrestrial signals, and we need more of them over croplands and ranchlands. As you know, farms represent a significant source of commercial activity in rural communities.

Owners, employees, buyers, vendors, and service providers all conduct business in and around the farm operations. Supporting increased wireless broadband deployment in the very places where farming activities occur, in the fields, will bring many benefits to rural communities. These include increased economic growth, improved environmental stewardship, and enhanced food security.

John Deere's higher purpose or mission is to help people live better lives through our commitment to those that are linked to the land. Today, we are expressing that commitment in the many ways we are developing and using technology, almost all of which is digital in nature and internet-based. That will help feed the world in a sustainable manner for generations to come.

Thank you, and I look forward to your questions.

[The prepared statement of Mr. May follows:]

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

804

Mrs. Blackburn. We thank the gentleman.

805

Ms. Word, you are recognized for 5 minutes.

806 STATEMENT OF JENNI WORD

807

808 Ms. Word. Good morning, Chairman Blackburn, Ranking Member  
809 Doyle, members of the subcommittee. Thank you for this  
810 opportunity to appear before you today.

811 My name is Jenni Word. I serve as the Associate  
812 Administrator and Chief Nursing Officer at Wallowa Memorial  
813 Hospital in Enterprise, Oregon. Our facility is a 25-bed  
814 critical-access hospital and Level 4 trauma center. I am proud  
815 to report we have been named one of the top 20 critical-access  
816 hospitals in the nation for the past two years.

817 Our hospital serves Wallowa County and, as Congressman  
818 Walden referred to before, has a population of just under 7,000  
819 people spread over 3,152 square miles in frontier northeastern  
820 Oregon. That is a population density of 2.2 persons per square  
821 mile. The next nearest hospital, also a critical-access  
822 hospital, is 65 miles away.

823 I would like to focus my testimony on the important role  
824 broadband plays in bringing telehealth services to rural and  
825 frontier areas. Our hospital provides a wide array of services,  
826 but not all the services our community needs. Telehealth has  
827 enabled us to fill this gap and ensure access to high-quality  
828 care in our frontier county.

829 In my written testimony, I provided three examples that  
830 illustrate the lifesaving role telehealth can play in areas like

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

ours. Broadband infrastructure is the foundation on which providers like ours can use telehealth technology to meet health crises like these.

Moving forward, reliable, affordable broadband in homes and remote rural hospitals and clinics will be critical as we transform the current healthcare delivery system. Our goal is a system that effectively coordinates care for our patients, rewards value, improves quality and patient safety, and reduces costs. Broadband is the lynchpin of that effort.

We are fortunate in Wallowa County to have good broadband infrastructure. But, even so, our county has many remote areas that do not yet have broadband connectivity. Nationwide, the Federal Communications Commission reports that 34 million Americans still lack access to adequate broadband.

Oregon has made significant progress in the deployment of broadband connectivity. However, a 2014 survey of broadband adoption in Oregon found that rural areas lagged behind their urban neighbors in having access to broadband connectivity and rural residents are less likely than their urban counterparts to use broadband technologies.

The Mississippi State Extension Service Index identified Wallowa County as one of 10 Oregon counties with the highest digital divide index. Congress took steps in the fiscal year 2018 omnibus appropriations bill to address the digital divide, and the FCC recently increased funding available through the Rural

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)



856 Health Care Program, which supports broadband adoption for the  
857 nonprofit rural healthcare providers. We applaud both of these  
858 actions and thank you for your role in making them a reality.

859 As these programs are implemented, we look forward to taking  
860 advantage of these new resources.

861 Finally, I would like to say something about telehealth.

862 The potential for telehealth to expand access to medical  
863 treatment seems limitless, especially in rural and frontier areas  
864 where vast distances make it difficult to get to a doctor or to  
865 a hospital. However, there are barriers preventing us from  
866 realizing that potential. For example, Medicare payment policy  
867 restricts sites eligible for reimbursement, limits distance site  
868 providers, and restricts the services for which Medicare will  
869 reimburse. Medicare does not reimburse for remote patient  
870 monitoring, a potentially vital tool in monitoring patients with  
871 chronic conditions, especially those in rural areas. Medicare  
872 also doesn't reimburse for phone, email, fax-based services, or  
873 store-and-forward technology.

874 Providers would like these geographic and setting location  
875 requirements eliminated and expansion of the types of technology  
876 that can be used, and coverage for all services that are safe  
877 to provide. Rural communities also need additional capital to  
878 develop telehealth capabilities as well as adequate funding to  
879 operate systems, once they are up and running.

880 I am pleased that the Bipartisan Budget Act of 2018 expanded

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

881 Medicare coverage for telestroke and provided waivers for some  
882 alternative payment models, but more should be done. Every week,  
883 it seems, new technologies become available to help patient needs.  
884 The use of telehealth and other new technologies will improve  
885 access to healthcare, improve outcomes, and reduce costs. Public  
886 policy should not hold us back as we seek to realize the potential  
887 these new technologies hold.

888 I applaud the committee and its Chair and my Congressman,  
889 Greg Walden, for the leadership it has shown in addressing these  
890 challenges. There is certainly more work to do, and Wallowa  
891 Memorial Hospital and other rural hospitals stand ready to work  
892 with you in that effort.

893 Thank you.

894 [The prepared statement of Ms. Word follows:]

895

896 \*\*\*\*\* INSERT 6\*\*\*\*\*

897

Mrs. Blackburn. We thank the gentlelady.

898

Ms. Coker Craig, you are recognized for 5 minutes.

899 STATEMENT OF SUZANNE COKER CRAIG

900

901 Ms. Coker Craig. Thank you all for your invitation this  
902 morning. I appreciate the opportunity to be here.

903 And thank you to Congressman Butterfield for the  
904 introduction. I am glad to hear you are hanging out at Abrams.

905 [Laughter.]

906 My name is Suzanne Coker Craig, and I am small business owner  
907 and former Commissioner in the town of Pinetops, North Carolina.

908 Our little town is 65 miles east of Raleigh and is centrally  
909 located between Greenville, Wilson, and Rocky Mount. We have  
910 a significant number of our residents who live well below the  
911 poverty level, and we are located in Edgecombe County, which is  
912 one of the poorest counties in the state. Unlike much of North  
913 Carolina, our local population has declined over the last 20  
914 years, and we struggle to attract and keep college-educated people  
915 as well as small businesses and small industry in our area.

916 Even with all of these challenges, Pinetops is a wonderful  
917 community in what I consider to be the best part of North Carolina.

918 We have all the benefits of small town life, but are an easy  
919 drive to small cities around us. We are a great place to live  
920 and to raise a family. And in March of 2016, our little town  
921 got symmetrical gigabit speed broadband internet service that  
922 made my 25-year-old nephew in Raleigh jealous.

923 But our own state legislature has constantly fought to

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

disconnect us and take away the best economic, educational, and lifestyle benefit we have had in 50 years. Like most small areas, ours got left way behind in the technology boom. As the internet exploded, we struggled to get much more than a dial-up connection.

Our only provider showed little interest in upgrading their antiquated services beyond what they billed as high-speed internet, which was defined as up to 10 megabits of service. Speed tests commonly showed that that was really between 4- and 6-megabits download with less than 1-megabit upload. And that was within a quarter mile of their hub. This would have been great service in 2000, but in 2015 it was a serious challenge to running a small business and providing access to modern education or healthcare. Other providers served nearby towns in our area, but were not at all interested in serving Pinetops.

So, around 2008, the city of Wilson, which is 17 miles west and in neighboring Wilson County, began providing gigabit-speed fiber-to-the-premises internet service to their citizens. They borrowed money from private investors and have repaid them with revenues from the network without using taxpayer dollars.

The city of Wilson has provided electric service to the town of Pinetops for well over 40 years and has been a great partner for our little town. So, we asked Wilson if they could bring that fantastic internet service our way. Well, in 2011, the North Carolina General Assembly passed a law that not only put significant restrictions on building municipal broadband

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

949 networks, but also specified that Wilson could not take their  
950 network beyond the Wilson County line, which was 6 miles away  
951 from Pinetops. So, we were sentenced by our own legislature to  
952 being 6 short miles away from technology that could help us help  
953 ourselves.

954 In 2015, the FCC preempted that state law and opened a window  
955 for Pinetops to invite Wilson to bring their internet service,  
956 which is called Greenlight, to us. So, in March of 2016, Pinetops  
957 residents eagerly began signing on as Greenlight customers.

958 I spoke with several people in town who telecommute or have  
959 small businesses, and the difference in service was amazing.  
960 One neighbor who works for a large banking operation described  
961 downloading and uploading her daily work files in 15 minutes  
962 instead of the hours it had taken with the fastest service that  
963 CenturyLink could provide. A small furniture manufacturer in  
964 town reported downloading large files from international  
965 customers in an hour or two rather than the 12-plus hours it had  
966 taken earlier. A local fire chief was able to use for the first  
967 time online video resources to train his volunteer firemen.  
968 Families with multiple children no longer had to timeshare to finish  
969 their online assignments. The service was fantastic, and we on  
970 the town board were working to promote Pinetops as the little  
971 town with symmetrical gigabit internet service.

972 But, once again, our legislature betrayed us. The state  
973 sued to overturn the FCC's ruling, and they won. Greenlight would

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

974 have to be forced to leave Pinetops, and we would be forced to  
975 take 10 giant steps back economically.

976 About the same time, Hurricane Matthew hit, and we were  
977 flooded terribly. The Greenlight techs were there within hours  
978 of the roads opening and hooking up the emergency shelters and  
979 the disaster operations. Our town board, with the enthusiastic  
980 backing of the residence and business, were eager to fight to  
981 keep Greenlight. And so, we were able to get an exemption, with  
982 a lot of fighting, that would allow Pinetops to keep Greenlight.

983 But, if another provider came in providing fiber services,  
984 Greenlight would have to leave. And we couldn't get language  
985 in the legislation that would make that service have to be  
986 comparable or serve everyone in town.

987 So, we got the exemption and we were happy with that. But  
988 now, Suddenlink has decided that, since they didn't want to serve  
989 us with basic service, now they are bringing fiber to Pinetops.

990 So, Greenlight has to leave.

991 Good internet service in today's economy is as essential  
992 as electric power was in the forties and fifties. Rural areas  
993 and small towns then had to be creative and resourceful and rely  
994 on municipalities and co-ops to provide electricity in areas that  
995 private providers weren't willing to serve. If not for the  
996 forward-thinking leaders of that time, it is hard to imagine how  
997 small-town America would have survived. We still have to be  
998 creative and resourceful in keeping our towns alive. We have

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

999 to be given the freedom to use all the tools we have.

1000 I need to emphasize that, while Pinetops now has broadband  
1001 access, that great service is limited to our 1-mile-square town  
1002 limits. Wilson would be connecting those homes, small towns,  
1003 farms, and outlying areas if the state barriers didn't exist.

1004 The solution to getting rural communities connected will  
1005 not come from one-size-fits-all legislation. It will not come  
1006 from waiting for large providers to come to our communities.

1007 Mrs. Blackburn. The gentlelady's time has expired. If you  
1008 can wrap up?

1009 Ms. Coker Craig. Yes, ma'am. I am sorry about that.

1010 [The prepared statement of Ms. Coker Craig follows:]

1011

1012 \*\*\*\*\* INSERT 7\*\*\*\*\*



1013 Mrs. Blackburn. You are perfectly fine. We are so  
1014 appreciative that each of you are here. We appreciate your  
1015 testimony.

1016 This concludes our testimony, and we will now move into our  
1017 Q-and-A portion of our hearing. And I will yield myself 5 minutes  
1018 for questions.

1019 Mr. Stroup and Mr. Aiken, I want to start with you. In your  
1020 testimony, you mention existing alternatives in the marketplace  
1021 to a big government approach that removes the ability for states  
1022 to make important decisions that directly impact their financial  
1023 health. One of the bills that does cause me concern is the  
1024 Community Broadband Act, which I think would threaten to undue  
1025 much of the progress that is being made across the country. The  
1026 bill is essentially a further-reaching version of the FCC's failed  
1027 2015 Municipal Broadband Order, which basically preempted the  
1028 fiscally-responsible measures that Tennessee had put in place  
1029 regarding municipal networks.

1030 So, Mr. Stroup, can you expand on the differences, the  
1031 specific advances, that some of your member companies have made  
1032 in recent years that have positioned them to become competitors  
1033 in the broadband market across the country? And is there anything  
1034 additional that we can do to help increase competition?

1035 And then, Mr. Aiken, to you, kind of looking in that same  
1036 vein, but from the wireless side, talk about how fixed wireless  
1037 has become a viable alternative. And are there specific examples

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

1038 that might be illustrative to the committee?

1039 Mr. Stroup, to you first, please, sir.

1040 Mr. Stroup. As I noted in my testimony, certainly the most  
1041 important things that our members have done is to increase the  
1042 capacity of the satellites that have been launched as well as  
1043 the speed, which ultimately makes the services more  
1044 cost-effective. So, I noted just the change in the last 10 years,  
1045 there has been a 20 times increase in the capacity of the  
1046 satellites. Satellite services start at \$49 a month. And so,  
1047 those are the two and three most important things that the industry  
1048 has done.

1049 As I also noted, there are plans to launch additional LEO  
1050 satellite systems. To give you a sense of that, there are  
1051 approximately 1700 satellites on orbit today. There are  
1052 satellite applications that have either been granted or pending  
1053 at the FCC for over 18,000 satellites. So, the growth in the  
1054 industry is tremendous. The capacity that will be available is  
1055 increasing accordingly.

1056 And the thing that is most important to us is continued access  
1057 to spectrum and technology neutrality. Without spectrum, we do  
1058 not have the opportunity to grow, and we just want to make sure  
1059 that neither Congress nor the FCC weights the scale against any  
1060 one industry against the other.

1061 Mrs. Blackburn. Okay. Mr. Aiken?

1062 Mr. Aiken. Thank you for the question.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1063 I think it is best illustrated with a story. Many farms  
1064 across our great country are not connected to broadband, and this  
1065 was the story of Lone Oaks Farm in Middleton, Tennessee, that  
1066 didn't have any broadband connectivity to the farm. Along came  
1067 Crossroads WiFi, a fixed wireless provider who offered a robust  
1068 business-grade broadband connection to that farm using the  
1069 spectrum band that I mentioned in my opening testimony, the CBRS  
1070 band.

1071 Through that broadband connection, that 2,000-acre farm was  
1072 on the short list to be considered by the University of Tennessee  
1073 for purchase. The University of Tennessee purchased that farm,  
1074 turned it into a 4H state facility and a research institution.

1075 And that small, local provider was able to grow the bandwidth  
1076 with the university, and it is just a great story of how a small  
1077 provider can provide big solutions to rural America.

1078 Mrs. Blackburn. I appreciate that, and that is a beautiful  
1079 property.

1080 Mr. Forde, permitting issues are a struggle. I would assume  
1081 small providers are disproportionately impacted. But we hear  
1082 about permitting issues regularly. They talk about the  
1083 burdensome application process. I wish you would elaborate on  
1084 that and, also, the fact that the Senate now has a discussion  
1085 draft that would streamline small-cell deployment.

1086 What we need to do is look at what more is needed to unleash  
1087 this private capital, to streamline this process, and to make

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1088 available more small cells that are like on the grain elevator  
1089 at your location.

1090 Mr. Forde. Well, thank you, Chairman Blackburn.

1091 Regarding the first part of your question, we have worked  
1092 very hard to continue to deploy broadband. We have had some  
1093 issues in some areas. Recently, in North Dakota we tried to run  
1094 some fiber from the Killdeer area up to Watford City and to  
1095 Williston. We had to hire several engineering firms, and some  
1096 difficult permitting issues crossing the Missouri River. So,  
1097 that is certainly one of the issues that we faced. That project  
1098 was delayed by several months that allowed service to get to those  
1099 areas.

1100 Regarding the small cell, certainly utilizing those areas  
1101 and some of our more urban areas in our footprint in that  
1102 legislation, but also I don't know if that is the solution for  
1103 some of our rural areas. We believe that the fixed wireless  
1104 technology will be able to cover much greater distances between  
1105 those elevators, between those farms, and the small cell will  
1106 be good for some areas that are a little bit more urban, a little  
1107 bit more populated.

1108 We want to make sure, also, that we have a level playing  
1109 field there, us as a provider, that those folks --

1110 Mrs. Blackburn. My time has expired.

1111 I recognize Mr. Doyle for 5 minutes.

1112 Mr. Doyle. Thank you, Madam Chair.

**NEAL R. GROSS**

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

1113 Mr. Aiken, the Commission is currently considering changes  
1114 to the license structure of the CBRS band. Based on your  
1115 testimony, it sounds like many of your members had already started  
1116 making investments in new technology based on how this band was  
1117 to be structured.

1118 First, I would like to ask you, do you think that if the  
1119 Commission acts to expand the geographic size of the spectrum  
1120 licenses, that your members and other rural providers will be  
1121 able to successfully bid for those licenses?

1122 Mr. Aiken. The short answer there, Congressman, is no.

1123 Mr. Doyle. And what do you think will be lost if the licenses  
1124 in these bands are made to be like traditional cellular licenses?

1125 Mr. Aiken. So, this band, it is absolutely critical to  
1126 expand rural broadband. As you mentioned, a number of our members  
1127 have already built out in the band. We polled our members. Over  
1128 60 percent of them had made investments in reliance on the rules.

1129 Like I said in my testimony, these are small companies providing  
1130 big service in rural America, and this would hamper their ability  
1131 to reach new customers that are within range of their towers.

1132 Mr. Doyle. Basically, it is your opinion that expanded  
1133 license size will actually hurt the deployment of broadband in  
1134 rural areas?

1135 Mr. Aiken. I believe so, and we have a proposal before the  
1136 FCC that is backed by a large number of rural providers that would  
1137 retain some small area license that would enable our providers

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1138 to participate in the auction.

1139 Mr. Doyle. I want to talk about the lower C-band, too.

1140 In the lower C-band, several satellite providers have proposed  
1141 freeing up a portion of the band to be auctioned for mobile  
1142 broadband license service. However, a broad array of  
1143 stakeholders have proposed spectrum-sharing rules in the rest  
1144 of the band that would enable fixed, locked, wireless broadband.

1145 What are the merits of this proposal over the other proposals  
1146 that would seek to transition the entire band to mobile broadband  
1147 use? And to be honest, are these proposals even realistic?

1148 Mr. Aiken. Thank you for the question, Congressman.

1149 I think in this band we have a fantastic opportunity to enable  
1150 gigabit fixed wireless in rural America and a way to do so  
1151 consistent with everybody getting a win here. We are part of  
1152 a much broader Broadband Access Coalition that includes, again,  
1153 a broad array of rural interests. And we put forth a proposal  
1154 that would effectively clear some of the spectrum for 5G, would  
1155 put some rational protections in place for satellite earth  
1156 stations, and would make the remainder of the band available for  
1157 license point-to-multi-point fixed wireless. We believe this  
1158 approach would have a significant impact of the availability of  
1159 broadband in rural America.

1160 Mr. Doyle. Thank you.

1161 Ms. Coker Craig, your testimony and the story of your  
1162 community is very compelling. And apparently, you have good

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1163 barbeque down there, too, although Butterfield didn't share any  
1164 of that with us.

1165 [Laughter.]

1166 But we have had other people from communities that have  
1167 provisioned their own broadband infrastructure here to testify  
1168 before us. It seems to me that every one of them seems to be  
1169 happier with the service they provided themselves than any other  
1170 available commercial option.

1171 Tell me what some of the advantages are of self-provisioning.

1172 Ms. Coker Craig. Well, it was amazing the difference to  
1173 be able to call if there was any problem or any problem with  
1174 anything with the connection, to call and you talk with someone  
1175 in Wilson who knew where Pinetops was. And the speed and the  
1176 reliability of their services and technicians were amazing. They  
1177 know us. They are our friends and neighbors. We could usually  
1178 get things fixed sometimes within a couple of hours. Sometimes  
1179 they could do it over the phone. But, if not, they would have  
1180 a technician there sometimes in 30 minutes.

1181 And it was just a tremendous asset to a business. When you  
1182 are operating a business, that time is money. And when you are  
1183 having to wait for two and three days for a technician to come  
1184 and fix your internet, it is well worth it to switch over to  
1185 Greenlight.

1186 Mr. Doyle. Yes.

1187 Well, Madam Chair, I see my time is almost expired. So,

**NEAL R. GROSS**

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

1188 I will yield back.

1189 Mrs. Blackburn. The gentleman yields back.

1190 The chairman of the full committee, Mr. Walden, is recognized  
1191 for 5 minutes.

1192 The Chairman. Well, thank you, Madam Chair.

1193 And again, to our witnesses, thank you for being here. I  
1194 thought I might put a photo up, or two, of Wallowa County, just  
1195 so you can enjoy the home view.

1196 And while we are working on that, Ms. Word, this is Chief  
1197 Joseph, a statue -- they do a lot of bronze work there -- with  
1198 the Wallowas behind. And Chief Joseph Days are coming up the  
1199 weekend after next. So, if you have got spare time and want to  
1200 come out and enjoy Chief Joseph Days, we would be happy to host  
1201 you. But you can see these photos, the wide-open spaces, some  
1202 of the farming community out there, and then, another look with  
1203 the Wallowas in the background.

1204 When I learned for the second year in a row rural healthcare  
1205 facilities like yours were facing a 25-percent cut in their  
1206 requested funding under the Rural Health Care Program, I  
1207 encouraged the FCC to take a close look at the program in order  
1208 to help telehealth facilities pay for the cost of this  
1209 connectivity. I talked to the Chairman and his team.

1210 So, I was really pleased in June when the FCC increased the  
1211 funding for the Rural Health Care Program by \$171 million a year,  
1212 increasing the cap for the program to \$571 million, effective

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)



1213 immediately. It is a 43-percent increase in funding. It  
1214 represents what the funding level would have been today if the  
1215 original \$400 million cap that was established in 1997 had been  
1216 adjusted for inflation.

1217 If the additional funding had not been provided, what would  
1218 these cuts have meant to Wallowa Memorial Hospital from your  
1219 perspective?

1220 Ms. Word. Thank you for the question.

1221 I think, simply, it would have been decreased access,  
1222 increased travel time, inconvenience for patients. You know,  
1223 it is ones that aren't feeling well; travel is difficult. Family  
1224 members are often taking time away off work as well. And then,  
1225 increased cost to the patient and to the community to provide  
1226 services or allow services out of town.

1227 The Chairman. In your testimony, you identified several  
1228 barriers to expanding telehealth. You mentioned restrictions  
1229 on Medicare reimbursements for remote patient monitoring,  
1230 burdensome state licensing requirements, and the capital  
1231 associated with developing and maintaining telehealth programs.

1232 Of these barriers, which do you think is most significant? What  
1233 impacts you the most?

1234 Ms. Word. Because we are very patient-centered and  
1235 patient-focused, I think the biggest barrier is the remote  
1236 monitoring or access for those remote, whether it be a remote  
1237 clinic, hospital, so that we can service the patients.

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

1238           The Chairman. And are there additional barriers the way  
1239 the current Rural Health Care Program is formulated by the FCC?  
1240           Anything there we need to be aware of?

1241           Ms. Word. Not that I can think of off the top of my head.

1242           The Chairman. All right. When you mentioned that the  
1243 nearest critical-access hospital after yours is 65 miles away,  
1244 do you want to describe what that journey is like in the winter?

1245           Ms. Word. Well, if the roads are open, not snow and ice,  
1246 it is a windy, two-lane highway. You are traveling with log  
1247 trucks, potentially farm equipment, not so much in the winter  
1248 probably. It is 65 miles, but it takes over an hour to make the  
1249 journey.

1250           The Chairman. That is down a narrow, windy, two-lane road  
1251 down into the river bottom and, then, up the canyons and out and  
1252 around. It is tough territory. So, if you lose service, if the  
1253 fiber gets severed, what happens then?

1254           Ms. Word. You have no connections. You are relying on your  
1255 own internal services within the county, within the cities. And  
1256 that is not unusual. We have lost all connection. Your  
1257 electronic health record goes down, your phone communication.

1258           We do drills around this. We are prepared for it because, for  
1259 us, it is a reality.

1260           The Chairman. And talk to me about the interconnectivity  
1261 among the other providers in the community there, the clinic,  
1262 pharmacy, some of those things.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1263 Ms. Word. Sure. We are really very fortunate in eastern  
1264 Oregon and Wallowa County, especially that we have separate  
1265 clinics, we have our hospital, but we really function together.  
1266 If you came from the outside, you would think it was one entity.  
1267 Some of these specialists, they may be initially contracted with  
1268 a non-hospital-owned clinic. Yet, we can still use them for an  
1269 inpatient in the hospital. The clinic will use services that  
1270 we have set up in the hospital as well. Wallowa Valley Center  
1271 for Wellness, mental health and behavioral health, has a great  
1272 telemedicine program that benefits everyone as well.

1273 The Chairman. All right. My time is about expired, Madam  
1274 Chair.

1275 Thank you. And thanks again for making the journey.

1276 Mrs. Blackburn. The chairman yields back.

1277 And, Mr. Welch, you are recognized for 5 minutes.

1278 Mr. Welch. Thank you very much.

1279 Mr. Butterfield has left, but I will tell a story behind  
1280 his back, but don't tell him. Shortly after he got elected to  
1281 Congress, he thought he was kind of a big deal, like a lot of  
1282 us. And he was back in Wilson, right next to Pinetops, and he  
1283 went into a diner. A number of women were there, and they knew  
1284 him. They looked at him and they said, "You know, that is pretty  
1285 good you got elected. Someday you may amount to something. You  
1286 may be mayor of Wilson."

1287 [Laughter.]

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

1288           And it is that hometown commitment, actually, that is so  
1289 wonderful about a lot of your testimony.

1290           Mr. Walden, just the description in those pictures, they  
1291 are very evocative for so many of us in our rural areas.

1292           I just loved your testimony about how important it is to  
1293 get that broadband there.

1294           Now there are two things. No. 1, I think, Madam Chair, it  
1295 is a little premature for us to congratulate ourselves on what  
1296 we have done for rural broadband because it kind of stinks in  
1297 a lot of places. It really does.

1298           No. 2, what Congress has to do, first and foremost, is we  
1299 have got to dedicate funds to the buildout of broadband. There  
1300 is just no escaping that. It is just like we made a decision  
1301 in this country in the thirties about electricity. There was  
1302 no economic case to be made for our utility companies to build  
1303 out electricity in rural America, none. But we made a decision  
1304 here, our predecessors did, that there was a social case to be  
1305 made for it because rural America has the kind of people like  
1306 you are describing, like Mr. Walden is describing. And we need  
1307 them.

1308           So, money is really going to be important. I just have to  
1309 say this. All of us who are dedicated to our rural  
1310 constituencies, unless we are going to put some money in there,  
1311 it is not going to go there. So, that is No. 1.

1312           No. 2, how do it? We have got to be flexible. That is why

**NEAL R. GROSS**

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

1313 I really enjoyed your testimony, Ms. Coker Craig, because I live  
1314 on a dirt road, an 8-mile dirt road, and we have got great  
1315 broadband. It was local people created a nonprofit. I don't  
1316 know how they managed to defy expectations, but they went up and  
1317 down the roads and they got each of us to invest a little bit.

1318 And we get that kind of service that you are talking about.

1319 So, I want to start asking a few questions. I will start  
1320 with you, Mr. Aiken. If we get the money -- and that is what  
1321 we need -- how do we deploy it in a way that is flexible? Because  
1322 some of those pictures I saw from Mr. Walden, we don't have those  
1323 in Vermont. There is a lot of hills and valleys. And one size  
1324 does not fit all. So, how could we, if we had the money, deploy  
1325 it in a way where we don't micromanage how to do it in Pinetops  
1326 versus Tennessee? Do you want to comment on that?

1327 Mr. Aiken. Sure. Thanks for the question, Congressman.

1328 We represent predominantly small businesses. We have a  
1329 couple of dozen providers who are participating in the upcoming  
1330 Connect America Fund Auction. But what I have heard from my  
1331 members time and time again is that complicated applications and  
1332 difficulty --

1333 Mr. Welch. Well, how do we make it simple, but accountable?

1334 I do think it has got to be done at a local level. Anybody else,  
1335 comment on that? I mean, you did it in Pinetops, right?

1336 Ms. Coker Craig. We did.

1337 Mr. Welch. How did you do it?

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

1338 Ms. Coker Craig. Well, like I said, we worked with the city  
1339 of Wilson. The only thing, we had that small window of time with  
1340 the FCC ruling. That was the only way we were able to do it because  
1341 the state legislature had said there would be no more expansion  
1342 past the Wilson County line.

1343 Mr. Welch. Okay. Anybody else want to comment on that?  
1344 How do we have accountability if we deploy money, but  
1345 flexibility? So, where a community is ready to go and they have  
1346 got whatever it takes, we can get them going. Anyone?

1347 Mr. Aiken. I can take a stab at that, Congressman.

1348 I think accountability on the back end is important. I think  
1349 we are comfortable with a reverse auction design like that which  
1350 is included in the LIFT America Act. We think that a streamlined,  
1351 but accountable application is important. That is one of the  
1352 reasons why we think the principles in the BROADBAND ACCESS Act  
1353 are so important.

1354 Mr. Welch. Okay. Thank you.

1355 Ms. Word?

1356 I am going to yield back. I am out of time. Thank you.

1357 Mrs. Blackburn. The gentleman yields back.

1358 I will say, we put \$670 million in the omni, our U.S., for  
1359 deployment, and \$171 million at the FCC for rural healthcare.

1360 Mr. Lance, you are recognized, 5 minutes.

1361 Mr. Lance. Yes, thank you.

1362 That brings me to my questions regarding the additional

**NEAL R. GROSS**

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

1363 funding that we put into our U.S. for a new loan and grant program  
1364 for rural broadband.

1365 To Mr. Forde and Mr. Aiken, from your perspective in rural  
1366 America, what is the best way this funding could be deployed in  
1367 order to reach the most Americans in need with the amount of  
1368 resources that the government has placed in that program?

1369 Mr. Forde. Certainly, focusing on those areas that are  
1370 truly unserved to make sure that we take care of them first I  
1371 think is very important, and, obviously, being  
1372 technology-neutral. We, of course, have our fiber networks.  
1373 We deliver gig through high-frequency cable, and then, we use  
1374 the fixed wireless tools to reach the last mile. So, having all  
1375 those things work.

1376 And I think there are some unique broadband grant programs  
1377 out there. The state of Minnesota has a program where you get  
1378 more points if you put more private capital into it. There is  
1379 a challenge process to make sure that there is no overbuilding  
1380 taking place, and a lot of unique things with that program that  
1381 we work with that really help to find those areas that are truly  
1382 unserved that need it most, and we are not spending too many  
1383 federal dollars on those.

1384 Mr. Lance. Do you know, do other states intend to proceed  
1385 the way Minnesota has proceeded, as you have outlined it?

1386 Mr. Forde. Not currently in our Midco footprint. Kansas,  
1387 I believe, has looked at it a little bit, but they are in the

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

1388 initial stages of that process.

1389 Mr. Lance. Thank you.

1390 Mr. Aiken?

1391 Mr. Aiken. Yes, I would echo what Mr. Forde said, that a  
1392 focus on unserved areas is critical. Ensuring that private  
1393 capital isn't overbuilt by government subsidies is also critical.  
1394 And we also believe that there should be a focus on  
1395 cost-effectiveness in the program. We have a limited number of  
1396 dollars. We have a lot of people to serve. And we need that  
1397 money to go as far as possible.

1398 Mr. Lance. There is, of course, a difference between  
1399 underserved and unserved. Mr. Aiken, from your expertise, how  
1400 many Americans are completely unserved?

1401 Mr. Aiken. The number is smaller than those that are  
1402 underserved. I think the FCC counts 24 million as not having  
1403 access to advanced telecommunications capability. That number  
1404 includes folks who have access to less than 25/3 broadband. But  
1405 our members are focused on providing that high-speed service that  
1406 rural Americans need.

1407 Mr. Lance. Thank you.

1408 Would anyone else on the panel like to comment?

1409 Mr. Stroup. Yes, I would like to comment a minute.

1410 Mr. Lance. Yes, of course.

1411 Mr. Stroup. I would like to emphasize that last year alone  
1412 two of our member companies, ViaSat and EchoStar, launched

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)



satellites with the advanced technologies that I talked about with 25/3 FCC-defined broadband speeds. Both of those companies have announced plans for their next satellites. And I talked earlier about the LEO systems that have been announced. So, our members are not looking for subsidies in order to provide these services. They are moving forward with launching this capacity, and certainly, as I noted earlier in my testimony, provide coverage across the entire country. So, certainly the industry is moving forward with launching additional capacity to provide service to all areas of the country without any subsidies.

Mr. Lance. Yes. Thank you.

I live in a state, New Jersey, that is the most densely populated in the nation. We are well served, by and large, but I want to assure the panel that I will continue to work on this issue, as the sponsor of one of the pieces of legislation that is important for this area.

And to those from the great state of Tennessee, my wife and I met in law school at Vanderbilt, and I have a great affection for your wonderful state, not only because the chairman is from that state, but also from personal experience.

I yield back a minute, Chairman.

Mrs. Blackburn. The gentleman yields back.

Mr. Loeb sack, you are recognized.

Mr. Loeb sack. Thank you, Madam Chair. I do, first, want to thank the Chair and the ranking member for holding this

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1438 important meeting today. It has been great testimony.

1439 And thanks to all of you on the panel today for your testimony  
1440 and for answering the questions.

1441 It is clearly no secret to those of us on the committee here  
1442 that I do like to talk about rural broadband. I am from Iowa.

1443 I have 24 counties in Iowa. It is not quite a fourth of the  
1444 state geographically, but it is quite a bit. And then, how to  
1445 build out capacity in Iowa and the rest of rural America. At  
1446 one point, the Chair even called me "Broadband Loeb sack," and  
1447 that is a flag that I am very happy to fly while I am on this  
1448 committee, while I am in the Congress.

1449 In my district, as many of you know, farming is a huge part  
1450 of the economy. I thank Mr. May and John Deere for all the great  
1451 work that those folks do with respect to the farming community  
1452 in Iowa and around the country, and, indeed, around the world  
1453 for John Deere.

1454 Farmers across America are facing a lot of challenges right  
1455 now. We don't need to talk about trade, but there are a lot of  
1456 things that are facing these farmers right now, a lot of  
1457 challenges. It makes it more important than ever I think for  
1458 our communities in the rural areas and the agricultural  
1459 communities to be as efficient and productive as possible.

1460 To help lend our farmers a hand, I joined with Representative  
1461 Latta in introducing the Precision Agriculture Connectivity Act.

1462 I really appreciate the fact that you folks were behind that,

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1463 obviously, Mr. May. That bill, as was stated, as you know, would  
1464 create a task force to help the FCC figure out how to deploy  
1465 broadband on agricultural land to promote more precise farming  
1466 techniques.

1467 Mr. May, I would just like to ask you, from your company's  
1468 perspective -- you did mention this already a little bit -- what  
1469 would having robust broad access mean to so many of your customers  
1470 who really need precise and efficient farming equipment? What  
1471 does this technology mean for agricultural productivity as well?

1472 Mr. May. Sure. Thank you for the question.

1473 Maybe I will give you a couple of examples of products that  
1474 will unlock a lot of productivity and, frankly, more  
1475 sustainability within agriculture. No. 1, I will go back to the  
1476 sixties and where we saw a three times increase in productivity  
1477 because of technology introduced at that time. That journey  
1478 continues. Today, what is driving that journey is access to  
1479 machines in the farm, on the farm field.

1480 For example, we have the ability today to stream  
1481 computer-generated prescriptions directly to a planter based on  
1482 the field conditions in that field and have the planter plant  
1483 in the most optimum way. When the farmer is in combining, picking  
1484 the corn in the field, we are sensing the environment that that  
1485 combine is in and connecting back to the cloud to stream  
1486 recommendations on how to optimize that combine, based on exactly  
1487 what it is sensing within that field.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1488           Also, when we have a machine go down, you know what that  
1489 means to a farmer. When that machine stops, it is dollars flowing  
1490 out the window of the cab, and we need to get the machine up fast.

1491       With internet connection, we can connect remotely directly to  
1492 that machine and diagnose the problem that is happening and get  
1493 them back up and running quickly.

1494           So, we believe this phase of internet-based agriculture is  
1495 going to unlock tremendous value and productivity and  
1496 sustainability.

1497           Mr. Loeb sack. Right, and feed America and feed the world.

1498           Mr. May. Absolutely.

1499           Mr. Lance. Just briefly, last September I went to visit  
1500 a farmer in one part of my district. I got there and he was getting  
1501 the corn in. And I knew how important that time was to him.  
1502 So, I said, "Listen, we don't have to go in your house for an  
1503 hour and talk about the issues. Do you mind if I get in the cab  
1504 with you?" And that is what we did to bring the harvest in.  
1505 And he was talking to me about the technology. It was really  
1506 quite amazing.

1507           But this particular bill, I am proud. You know, I have  
1508 worked with Congressman Latta on that. We have got to make sure  
1509 that we have the information, so that these machines can operate  
1510 as effectively as possible.

1511           Are there any other things you would like to add that we  
1512 could be doing along those lines?

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1513 Mr. May. First of all, thank you for your work on that.  
1514 We believe that that will bring a significant amount of value  
1515 to agriculture across the United States.

1516 I think one of the other things that could be helpful is  
1517 maybe a joint study between the FCC and the USDA --

1518 Mr. Loeb sack. Right.

1519 Mr. May. -- to truly understand where do we have the  
1520 issues, where it is unserved, as was mentioned --

1521 Mr. Loeb sack. That is right.

1522 Mr. May. -- and underserved, so that we can attack these  
1523 problem areas directly.

1524 Mr. Loeb sack. And that is connected to my other question,  
1525 actually, too. I am probably just going to have to ask this  
1526 question for the record of you, Mr. Aiken, but it has to do with  
1527 mapping, obviously. I am very happy to get my mapping bill  
1528 through.

1529 But I do have a letter, Madam Chair, from Chariton Valley  
1530 Electric Cooperative. If I could put that in the record with  
1531 unanimous consent?

1532 Mrs. Blackburn. Without objection.

1533 Mr. Loeb sack. Thank you so much.

1534 [The information follows:]

1535 \*\*\*\*\* COMMITTEE INSERT 8\*\*\*\*\*

1536 Mr. Loeb sack. And then, I will just submit a question to  
1537 you, Mr. Aiken, for the record.

1538 Mr. Loeb sack. And I yield back. Thank you, Madam Chair.

1539 Mrs. Blackburn. The gentleman yields back.

1540 And next week, he will have the opportunity to ask the FCC  
1541 about doing that study, and I am sure he will.

1542 Mr. Latta, you are recognized for 5 minutes.

1543 Mr. Latta. Thank you, Madam Chair, and thanks very much  
1544 for having this hearing today. It is very, very needed.

1545 I represent the largest farming and producing district in  
1546 the state of Ohio. It is important to our agricultural producers  
1547 out here to have this technology.

1548 I have served and serve as the Co-Chair of the Rural Broadband  
1549 Caucus and also Co-Chair of the Rural Telecommunications Working  
1550 Group. We believe that it is absolutely important that we get  
1551 the broadband out to our rural areas of our country. And it is  
1552 not only the ag side, but from the testimony we have heard from  
1553 the other witnesses, if you can't operate a business or you can't  
1554 operate a hospital, you can't do certain things out there if you  
1555 don't have that technology. So, it is absolutely important that  
1556 we have that.

1557 My area is a little bit different from the chairman of the  
1558 full committee, where you saw the mountains in the background.

1559 If you look at my district, it is probably as flat as your table  
1560 that you are sitting at. But we grow things and we are very

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

1561 productive there.

1562 But if I could ask my first question, Mr. May, does it matter  
1563 to you what type of technology is used to deliver that broadband  
1564 service to connect agricultural producers, customers, and vendors  
1565 across America, as long as the service is safe, affordable, and  
1566 effective at meeting the needs of those users?

1567 Mr. May. You know, there is lots of technologies that can  
1568 be applied to make agriculture more productive. Frankly, we  
1569 think each one of them has a place and we are open to all of them,  
1570 whether you talk guidance, GPS systems, using satellite-based  
1571 networks, to guide vehicles in the field within centimeters, that  
1572 plays a critical role. Internet connections and the ability to  
1573 stream large quantities of data is also significant. For us,  
1574 we think there are several technologies that can be leveraged  
1575 within agriculture, but, certainly, internet connectivity is  
1576 critical from the data side of agriculture.

1577 Mr. Latta. What would you say especially on the GPS and  
1578 being able to be within centimeters? About two years ago, I was  
1579 out in the southwest part of my district. What we were doing  
1580 at that time, they were showing how -- you know, my mom grew up  
1581 on a farm. My grandfather used horses back in the thirties.  
1582 I saw in your testimony that Deere has been around now for 181  
1583 years. My wife's family has been on the same farm in northwest  
1584 Ohio for 185 years.

1585 Mr. May. Excellent.

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

1586 Mr. Latta. But that day that we were out, they were putting  
1587 in fertilizer in furrows to keep from having runoff or anything  
1588 like that. But in the spring, when they were going to go out  
1589 and plant that corn, they were going to be able to put it within  
1590 an inch of where that furrow was. That is what that technology  
1591 does. So, we appreciate that.

1592 Mr. May. Absolutely.

1593 Mr. Latta. Mr. Stroup and Mr. Forde, if I can ask you, will  
1594 both of you provide examples of how your industries are working  
1595 to promote rural broadband for precision agriculture, and what  
1596 are some of those broadband solutions?

1597 Mr. Stroup. I would like to start by noting that precision  
1598 begins with GPS, as you noted. It is important to recognize that  
1599 GPS is provided via satellite. Also, precision agriculture  
1600 involves earth observation, weather information which is gathered  
1601 via satellite, and the ability to take the imagery and refresh  
1602 it on a daily basis, all one of the capabilities of the satellite  
1603 industry.

1604 But, to get to the communications aspect of it, the addition  
1605 of the capacity that we have been talking about is an important  
1606 aspect of what the satellite industry is doing. That, in  
1607 combination with flat-panel antenna technology, which provides  
1608 the ability to build it into every tractor/combine and provide  
1609 continuous connectivity, because, ultimately, one of the great  
1610 advantages of the satellite industry is ubiquitous coverage.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)



1611 So, we have complete coverage of rural America. The important  
1612 thing that we are doing in terms of the capacity is adding  
1613 additional satellites and the high technology that we have talked  
1614 about.

1615 Mr. Latta. Thank you.

1616 Mr. Forde, I have got about 49 seconds, if you can answer  
1617 that?

1618 Mr. Forde. Absolutely. One of the greatest examples is  
1619 we have a small group of elevators, and the farmers in that region  
1620 are now able to use Midco fiber running to some of those elevators  
1621 and connecting that group of elevators through fixed wireless  
1622 technology. So, the farmers are able to tell and direct their  
1623 trucks when they are dumping out their grain and instantly be  
1624 able to see where their grain was going in, and being able to  
1625 see those records immediately online. So, I think that tool has  
1626 been great for that, that group of elevators and the farmers in  
1627 the area to make sure they know how much grain was going and how  
1628 much was unloaded.

1629 Additionally, we have grain dryers. Of course, drying corn  
1630 takes a tremendous amount of stuff. You have folks and farmers  
1631 that are monitoring grain dryers almost 24 hours a day to keep  
1632 those things running. Well, fixed wireless technology allows  
1633 them to do some of that from their easy chair in their homes and  
1634 spend more time with their families

1635 Mr. Latta. Thank you very much. Madam Chair, my time is

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1636 expired.

1637 Mrs. Blackburn. The gentleman yields back.

1638 Mr. McNerney, you are recognized.

1639 Mr. McNerney. I thank the chairwoman and I thank the  
1640 panelists.

1641 Ms. Craig, state and local governments in California are  
1642 doing important work right now with private industry to build  
1643 out broadband in the state. I believe our state is leading the  
1644 nation when it comes to forward-leading policies in this area.

1645 But I am worried about calls to preempt state and local government  
1646 in the name of streamlining wireless siting policies. In fact,  
1647 California just rejected such a proposal on the state level.  
1648 What we need, I believe, instead, is industry and cities working  
1649 together to meet individual constituents' needs like what just  
1650 happened in San Jose. Do you think the federal streamlining of  
1651 local government siting policy will make meaningful progress for  
1652 bringing high-speed fiber to unserved and underserved areas?

1653 Ms. Coker Craig. Well, I think if that streamlining would  
1654 give us the flexibility in local areas to work with our partners  
1655 -- and like I said, our partnership with Wilson was  
1656 well-established. To me, it was a natural partnership. We  
1657 trusted them. We knew that they were being fiscally responsible  
1658 with this network. So, if that streamlining would simplify and  
1659 give us the flexibility that we need, because rural areas are  
1660 very unique. Some things may work for one area, but not in

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1661 another.

1662 Mr. McNerney. Well, that is the point, isn't it, that you  
1663 don't want a uniform federal policy that preempts local/state  
1664 policies in some name of streamlining?

1665 Ms. Coker Craig. Right, but we also need to get past those  
1666 barriers, those barriers that we had, and our response was the  
1667 state government.

1668 Mr. McNerney. Well, thanks. Rather than fighting against  
1669 local governments, I think local governments and industry could  
1670 work together to find meaningful solutions. The Broadband  
1671 Finance, Investment, and Innovation Act that Congress Lujan  
1672 introduced -- and I am cosponsor of -- would help public/private  
1673 partnerships gain access to capital for deploying high-speed  
1674 broadband. I think you could make a real difference in districts  
1675 like mine and others. Do you think the use of PPPs, as this  
1676 legislation envisions, would allow federal government to work  
1677 constructively with local governments?

1678 Ms. Coker Craig. It sounds like it would. I am not terribly  
1679 well-versed on that legislation, but it sounds like it would.

1680 Mr. McNerney. Okay. Thank you. I appreciate that.

1681 Mr. May, for some time now I have been raising concerns about  
1682 cybersecurity and internet-connected devices. The LIFT America  
1683 Act, which I am a cosponsor, would acknowledge these concerns  
1684 by requiring that all broadband projects funded by the Act would  
1685 have to work to meet network and security specifications. What

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1686 might cybersecurity vulnerabilities mean to farmers who are using  
1687 advanced agricultural technology?

1688 Mr. May. Farmers today that are utilizing these advanced  
1689 technologies are streaming large quantities of data, not only  
1690 to their own farm, but to their trusted advisors to help them  
1691 make better decisions.

1692 John Deere has been very transparent in our role to make  
1693 sure that that data is as secure as possible, it is accessible,  
1694 and it is easy to share. We have also tried to work with Farm  
1695 Bureaus to develop more standards around what sort of security  
1696 protocols should be in place. We believe that the security of  
1697 data is critical and we support continuing to invest in that.

1698 Mr. McNerney. But what risks do farmers have, the ones that  
1699 are actually using the technology?

1700 Mr. May. The risk the farmer could have is if their data  
1701 gets in the hands of somebody they didn't intend it to. So, their  
1702 yield data or how they planted the fields, what seed they used,  
1703 that is their IP, and if that got in the hands of, you know, I  
1704 planted this hybrid, I sprayed with this sort of application,  
1705 and I created a yield 10 percent higher than you, that is IP.

1706 And if that were to get in the hands of somebody else, then it  
1707 is a loss to the farmer.

1708 Mr. McNerney. Thank you.

1709 Ms. Word, in your testimony you point out that fewer than  
1710 50 percent of households in the bottom income quintile use

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

1711 internet at home, and that narrowing this divide would become  
1712 even more important as healthcare moves to a value-based system.

1713 Can you expand on your testimony and talk about the health  
1714 implications if lower-income middle Americans are unable to  
1715 afford access to broadband at home?

1716 Ms. Word. Sure. Thank you for the question.

1717 Those patients at that lower socioeconomic status are often  
1718 some of the less healthy patients or they don't access healthcare  
1719 as frequently. So, there are ways that we could do in-home  
1720 monitoring, whether it is video, phone, email, monitoring of their  
1721 health conditions that would prevent readmissions maybe to the  
1722 hospital, improve their health, get them regular visits with their  
1723 doctor when maybe they can't even afford to drive in to the clinic.

1724 Mr. McNerney. Thank you, Madam Chairman. I yield back.

1725 Mrs. Blackburn. The gentleman yields back.

1726 Mr. Guthrie, 5 minutes.

1727 Mr. Guthrie. Thank you, Madam Chairwoman, for holding this  
1728 meeting.

1729 I would like to start by thanking my Co-Chair from  
1730 California, Doris Matsui. We have worked on the Spectrum Caucus  
1731 together. It seems like every meeting we have here we talk about  
1732 spectrum, but it is so important.

1733 I just want to point out, in the RAY BAUM Act, there was  
1734 also just nuances of technology policy. It is amazing. We had  
1735 actually put in there the Spectrum Auction Deposits Act, just

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1736 so they could deposit bank deposits for selling of spectrum.  
1737 That was asked for by Chairman Pai. And the chairwoman was great  
1738 to work with us and have this in the mark, so that we could move  
1739 forward. And I appreciate you doing that.

1740 I am also pleased with the Commission's work on midband,  
1741 licensed and unlicensed bands, that can help us keep the U.S.  
1742 on the cutting edge of 5G, rather than letting China or any other  
1743 person try to beat us to that.

1744 Mr. Forde -- and also Mr. Aiken, I might ask you to comment  
1745 on the question for Mr. Forde, but if you would comment? --  
1746 starting with the spectrum question, I know that you are trying  
1747 to provide service for unserved areas by using fixed wireless  
1748 technology. And you say in your testimony that you need access  
1749 to more spectrum in order to accomplish that. Charter is doing  
1750 similar things in Kentucky. So, thanks for your efforts.

1751 And for Mr. Forde and Mr. Aiken, how much spectrum do you  
1752 think is needed for fixed wireless and what would be the results  
1753 for consumers? And what more can we do on this front? We can  
1754 start with Mr. Forde and, then, Mr. Aiken.

1755 Mr. Forde. Yes, I mean, certainly, access to more spectrum,  
1756 most importantly, the type of spectrum that works best for our  
1757 customers and our people in rural areas. We need to make sure  
1758 that the spectrum is offered, provides interference protection  
1759 out there. I know the C-band has been talked a little bit about  
1760 today, but we are, of course, an existing cable television

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1761 provider and we use that C-band to provide television service  
1762 to tens of thousands of customers across all the states that we  
1763 serve. And that is the only option that we have. So, if we were  
1764 to look at that band for fixed wireless, we need to make sure  
1765 that that is also protected.

1766 And one of the bands that isn't being used as much in our  
1767 area is the 2.5, the educational broadband. One of the reasons  
1768 we really like that spectrum is because it is able to go penetrate  
1769 dense forests, tree lines, things like that, and get through those  
1770 obstacles. Obviously, it does have a certain educational  
1771 benefit. I mean, I live in a very rural area. My kids go to  
1772 a school out in the country 5 miles from my house. And I am amazed,  
1773 even at their young age, how much work that is destined on having  
1774 that good, reliable internet connection.

1775 So, yes, I think we need more spectrum in all these areas  
1776 to accomplish it, but let's make sure it works for everybody.

1777 Mr. Guthrie. Thank you.

1778 Mr. Aiken?

1779 Mr. Aiken. Thanks for the question, Congressman.

1780 Yes, I would echo what Mr. Forde said. We are looking at  
1781 a lot of midband spectrum, so the same sort of spectrum bands  
1782 that Mr. Forde mentioned, the EBS spectrum at 2.5 gigahertz, the  
1783 3.5 gigahertz spectrum, the CBRS band which the FCC is currently  
1784 considering, as well as the 3.7 to 4.2 spectrum band. That  
1785 midband spectrum has great characteristics to be able to go a

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1786 long ways and carry a significant amount of bandwidth, which is  
1787 perfect for radios that have to go many miles to houses in rural  
1788 America.

1789 Mr. Guthrie. Thanks.

1790 Another concern, I have a district that could be a little  
1791 bit of -- Bob Latta just said his is as flat as a table, some  
1792 of the best farmland in the country. And I have some that doesn't  
1793 have the mountains quite that my friend from Oregon has, but  
1794 beautiful mountains and lakes, and Mammoth Cave, if anybody wants  
1795 to visit, is there as well. So, it is a beautiful place, but  
1796 it is rural and, also, it is suburban and urban.

1797 I live in Bowling Green, which is kind of a boon, tied in  
1798 with the work our chairwoman has done in Middleton, such a boon  
1799 town. We are kind of tied in with that. I am hour from Nashville.

1800 If you look at mapping, so I am talking about if you look  
1801 at mine, you would say Bowling Green is covered with broadband.

1802 And we have some friends out here from Connected Nation which  
1803 is a local hometown group that does the mapping. But it depends  
1804 on where you live. I have very rural counties that is exactly  
1805 what we are talking about. But, even where I live, some people  
1806 won't develop; they can't move forward because people don't want  
1807 to buy a home that doesn't have broadband access moving forward.

1808 So, just in mapping, getting more specific in mapping, I think  
1809 we are talking about it is just too broad to say that one county  
1810 is covered or not.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)



1811 My question is for the panel. I didn't leave you much time.  
1812 But what recommendation do you have to improve the granularity  
1813 and accuracy of the data collected? And what recommendations  
1814 do you have to improve it? Should NTIA coordinate with the  
1815 Commission or are there other ideas about giving it to NTIA solely?  
1816 Anybody? I only have two seconds, so if one of you wants to  
1817 get that? Just making mapping better, NTIA.

1818 Mr. Stroup. Certainly, I would start with ensuring that  
1819 the information is up-to-date. We have recognized that, given  
1820 the advances in the satellite industry, the fact that we do provide  
1821 25/3 coverage is not included in the current map.

1822 And one other technology that I would acknowledge that I  
1823 think will be useful in terms of the broadband mapping is  
1824 technology that is being deployed that allows for RF mapping from  
1825 space. Ultimately, I would recommend that that company's  
1826 technology -- they are launching their first three satellites  
1827 this year -- be considered to be able to identify where there  
1828 is actually a signal, rather than just identification of hopes  
1829 that there is a signal.

1830 Mr. Guthrie. Thank you. We are out of time. I yield back.

1831 Mrs. Blackburn. Ms. Matsui, you are recognized.

1832 Ms. Matsui. Thank you very much, Madam Chairman.

1833 We talked about spectrum is absolutely necessary to meet  
1834 the coverage requirements of rural broadband networks. In 2004,  
1835 Congress created the Spectrum Relocation Fund to assist federal

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1836 agencies relocating or sharing spectrum for wireless broadband  
1837 use. And in 2015, Congress made improvements to the SRF by  
1838 allowing agencies to use SRF funds for engineering research and  
1839 development. But current law limits how much of these funds can  
1840 be used by agencies to fund the research and related activities  
1841 necessary to potentially reallocate or share their spectrum.  
1842 Last month, my spectrum partner, Congressman Guthrie, and I, along  
1843 with Senators Wicker and Schatz, introduced the SPECTRUM NOW Act  
1844 to fix this problem. Specifically, the framework of the SPECTRUM  
1845 NOW Act could provide a pathway for NTIA and DoD to make additional  
1846 100 megahertz of spectrum available in the 3.4 gigahertz band.

1847 Mr. Aiken, what potential does a 3.4 gigahertz band have  
1848 for WISP networks, and how could the SPECTRUM NOW Act help meet  
1849 the growing demand for networks across rural America?

1850 Mr. Aiken. Thank you, Congresswoman, and thank you for your  
1851 leadership on this issue. We are incredibly supportive of that  
1852 legislation, and it could make a real difference in rural  
1853 broadbands, particularly if the FCC gets the rules right on the  
1854 3.5 gigahertz or CBRS rulemaking, because that would allow these  
1855 fixed wireless radios to just simply have a software upgrade and  
1856 be able to utilize the spectrum in that band as well.

1857 Ms. Matsui. Right. Okay. Thank you.

1858 Narrowband IoT networks are particularly useful for  
1859 long-range, low-power applications. Specifically, these  
1860 networks improve capacity, spectrum efficiency, and power

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1861 consumption levels of user devices. Narrowband IoT networks have  
1862 potential both nationwide and particularly for rural coverage.

1863 These networks can co-exist with commercial mobile networks,  
1864 and their propagation characteristics provide better range and  
1865 reduce coverage costs for consumers in both rural areas and across  
1866 the country.

1867 The entire panel, what potential benefits do narrowband IoT  
1868 networks have in rural areas from a spectrum efficiency, cost,  
1869 and deployment perspective?

1870 Mr. Stroup, would you like to start?

1871 Mr. Stroup. Certainly. I think, as you noted, narrowband  
1872 signals are more spectrum-efficient and you can put them in  
1873 smaller allocations. Companies like Iridium, which is a  
1874 satellite-based company that has been providing IoT services in  
1875 rural America for some time. So, those services are already  
1876 deployed. They tend to be more cost-effective just because they  
1877 do not have the same power requirements, either, that broadband  
1878 systems do.

1879 Ms. Matsui. Thank you.

1880 Mr. Forde?

1881 Mr. Forde. We would be happy to get back to you on that.

1882 Ms. Matsui. Oh, certainly. Ms. Matsui. Mr. Aiken?

1883 Mr. Aiken. Sure. We generally view those networks as  
1884 incredibly complementary to fixed wireless networks. It enables  
1885 a lot of connectivity on farms that have a lot of benefit to

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1886 precision agriculture efforts. We view those networks as  
1887 complementary, and we see customers of our members who are farmers  
1888 utilize both.

1889 Ms. Matsui. Okay. Fine.

1890 Mr. May?

1891 Mr. May. That technology we believe will play a role in  
1892 machine-to-machine communication --

1893 Ms. Matsui. Yes.

1894 Mr. May. -- but very limited capability if you have to  
1895 upload data to the cloud. So, where we are sharing maps within  
1896 a field between planters, it makes a lot of sense. But if we  
1897 need to transfer data to or from that machine, it has limited  
1898 capability.

1899 Ms. Matsui. Okay. Fine.

1900 Ms. Word. I will claim a little bit of ignorance, being  
1901 a healthcare practitioner and not as much on the technology side.

1902 But I can say, with our diverse terrain in our county, I think  
1903 we take advantage of just about every opportunity that is out  
1904 there.

1905 Ms. Matsui. I am sure.

1906 Ms. Word. Certain technologies are going to work better  
1907 in different areas.

1908 Ms. Matsui. Absolutely.

1909 Ms. Craig?

1910 Ms. Coker Craig. I will also claim ignorance in this,

**NEAL R. GROSS**

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

1911 proudly. But it sounds to me like it is just another option,  
1912 and it points again to the flexibility that small communities  
1913 need to have in working with whatever tools they can get.

1914 Ms. Matsui. Okay. I don't have much time, but I want to  
1915 ask the question on the C-band, about the particular clearing  
1916 mechanism that could be used to allow additional terrestrial use  
1917 in the 3.7-4.2 gigahertz band. In particular, NRPM has sought  
1918 comment on whether market-based or the auction approach could  
1919 be utilized to clear the spectrum that could, then, be made  
1920 available for terrestrial mobile use.

1921 Mr. Stroup, I am interested in how a voluntary market-based  
1922 mechanism would function for the very services currently being  
1923 utilized in the C-band.

1924 Mr. Stroup. I think one of the most important things to  
1925 keep in mind with respect to the C-band is just how heavily used  
1926 it is. As part of the NOI process that the FCC went through,  
1927 there were a number of users that came forward, and there are  
1928 thousands of earth stations serving over 120 million people for  
1929 video distribution services. Ultimately, if the FCC does decide  
1930 that they are going to make any of that spectrum available, a  
1931 market-based approach where they have an opportunity to work with  
1932 a customer base, meaning the satellite companies have an  
1933 opportunity to work with the existing customer base, is more  
1934 likely to achieve the goals in the short term.

1935 Ms. Matsui. Okay. Thank you very much, and I have run out

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1936 of time. Thank you very much.

1937 Mrs. Blackburn. The gentlelady yields back.

1938 Mr. Olson, you are recognized.

1939 Mr. Olson. I thank the Chair.

1940 And welcome to our six witnesses. Not to mislead you all,  
1941 Texas 22 is two-thirds the suburbs of Houston, Texas, and  
1942 one-third rural. That means corn, milo, cotton, and cattle.  
1943 Our smallest farms and ranches are doing just fine. They have  
1944 the broadband access that greater Houston has, but that access  
1945 can disappear in a few hours in a natural disaster, like Hurricane  
1946 Harvey.

1947 We learned a lot from Hurricane Ike that hit us in 2008.

1948 We bury our lines deep in the soil, so that stayed up a lot.

1949 We still lost some connectivity during the storm. And as you  
1950 know, the most precious, lifesaving commodity in a disaster is  
1951 information. We found out, too, our process for permits needs  
1952 to be streamlined to provide that lifeline.

1953 And that is why I introduced H.R. 4045, the Connecting  
1954 Communities Post Disasters Act. This legislation allows federal  
1955 disaster areas to be exempt from the National Environmental Policy  
1956 Act and the Historical Preservation Act. That just lets  
1957 communities get going quickly to rebuild.

1958 Madam Chairman, I would like to ask unanimous consent to  
1959 introduce two letters of support for my legislation, one from  
1960 the NTIA and one from the WIA.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1961 Mrs. Blackburn. Without objection.

1962 [The information follows:]

1963

1964 \*\*\*\*\* COMMITTEE INSERT 9\*\*\*\*\*

1965 Mr. Olson. Mr. Stroup, a question for you, sir. What are  
1966 your main considerations from your perspective in the industry  
1967 that federal agencies can streamline disaster requirements and  
1968 just streamline process for permits overall, especially in  
1969 disasters? Any advice for federal government to act, so we don't  
1970 have the problems we had with Hurricane Harvey?

1971 Mr. Stroup. Certainly, the satellite industry provides  
1972 important capability in hurricane and natural disaster events  
1973 because we have our infrastructure in the sky. From a permitting  
1974 perspective, just the opportunity to be able to get our earth  
1975 stations located, if they are not already in place, and work with  
1976 existing customers like the cellular industry in order to be able  
1977 to get their portable systems up and running. So, our  
1978 infrastructures we don't need permitting with respect to that.  
1979 It is the earth stations where we can benefit from a streamlined  
1980 process.

1981 Mr. Olson. As a side note, DIRECTV addition to our home  
1982 was basically weather radar. Without the TV, guess what is going  
1983 to hit us in about 10 minutes? A big, nasty thunderstorm. So,  
1984 thank you for that.

1985 My next question is for you, Mr. May. I saw the third  
1986 generation of agriculture revolution in northwest Fort Bend  
1987 County a few years ago. The farmer was not a farmer. He was  
1988 what I call a manager of farm technology. He had this massive,  
1989 huge John Deere tractor, a big, self-contained cockpit, air

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)



1990 conditioning. It had a little radio, a satellite radio. The  
1991 tractor was driving itself. What made that so special is he was  
1992 putting every seed down perfectly, the same distance apart, the  
1993 same depth, making all the turns. And so, that is exciting.

1994 You talked about, also, 4G. It is just the fourth  
1995 agricultural revolution which uses artificial intelligence and  
1996 machine learning to allow farmers to be more productive, be better  
1997 farmers. Can you discuss the benefits of AI in the agricultural  
1998 sector?

1999 Mr. May. Absolutely. We are really excited. We call this  
2000 the fourth generation, if you will, of farming. The new  
2001 technologies that are available to us are going to bring -- the  
2002 way I like to describe it is, today, a farmer, that farmer still  
2003 relies heavily on his eyes for vision to see what is happening  
2004 in the field. He relies on the 30 years of knowledge he has in  
2005 head. And then, he makes adjustments with his fingers on the  
2006 computer to optimize the machine. Computer vision, artificial  
2007 intelligence, and robotics are going to help make that farmer  
2008 even more better.

2009 We recently acquired a company called Blue River that is  
2010 focused on eliminating up to 90 percent of chemicals that are  
2011 used in the field by only spraying the weeds that are located  
2012 within the fields. So, it is a huge advantage to productivity  
2013 and, more importantly, sustainability.

2014 Mr. Olson. Thank you. I have 18 seconds left. So, I would

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2015 like to offer my help to you, Mrs. Coker Craig, the whole town  
2016 of Pinetops, North Carolina. My dear friend, Mr. Butterfield,  
2017 talked about having barbeque at Abrams. With all due respect,  
2018 ma'am, if you want the best barbeque in America, that is in Texas,  
2019 Texas barbeque.

2020 [Laughter.]

2021 I offer you to come to either Killen's in Pearland, Texas,  
2022 or The Swinging Door in Fort Bend County to have the best barbeque  
2023 in America.

2024 I yield back.

2025 Mrs. Blackburn. And I will challenge that.

2026 [Laughter.]

2027 Anybody ever heard of Memphis and the barbeque competition?

2028 [Laughter.]

2029 All right, Ms. Eshoo, 5 minutes.

2030 Ms. Eshoo. Well, I can't recommend a barbeque in Silicon  
2031 Valley, but --

2032 [Laughter.]

2033 Thank you, Madam Chairwoman, for having this. This is a  
2034 very important hearing. When at least a third of our country  
2035 is either underserved or not served in the second decade of the  
2036 21st century, that is a major issue for our country. Our Founding  
2037 Fathers knew that, to be a united country, that Americans needed  
2038 a nationwide communication system. And so, this is a very  
2039 important responsibility that we have.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2040 I want to thank the witnesses. Each one of you I think has  
2041 been excellent. And you have touched, in a deep and broad way,  
2042 either what your association members are doing, what your  
2043 companies are doing, what is happening in healthcare, and what  
2044 is happening in municipalities.

2045 I want to thank the chairwoman for, in her opening statement,  
2046 making a positive comment about the dig-once policy that was in  
2047 the RAY BAUM legislation. It is sensible, dig once. I don't  
2048 know why no one ever thought of it before we did it. I guess  
2049 it was, as my grandmother used to say, the most uncommon of the  
2050 senses is common sense. But, at any rate, we got that one done.

2051 Now, at the same time, she was critical of the Community  
2052 Broadband Act, and that undermines state legislatures. Now I  
2053 had very purposefully introduced that legislation because I think  
2054 it is important to examine what is standing in the way, why are  
2055 we not making headway, especially in rural areas. And I have  
2056 that, too, in my district. Imagine, in Silicon Valley there are  
2057 people that are either underserved or have no service whatsoever.

2058 I think most people would be stunned to realize that.

2059 There are today about 20 states that have outright  
2060 prohibitions or bans relative to municipal broadband. Now I  
2061 think that these state legislatures are undermining local  
2062 municipalities from coming up with their own solutions. I come  
2063 from local government, like you, Ms. Craig, and I really have  
2064 a reverence for local government. I prefer a bottom-up than a

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2065 top-down in many cases. Now there are some cases where I believe  
2066 a national umbrella is very important relative to federal policy  
2067 for our country.

2068 I want to ask you, Ms. Craig, why do you think anyone would  
2069 do that? I mean, it has been proven to be effective. Cities  
2070 like Chattanooga and Wilson were stopped -- stopped -- from  
2071 deploying high-speed broadband access to people who want it.  
2072 Now there is a whole variety of reasons that we can stitch together  
2073 why we are where we are, one-third of the country. But who did  
2074 this in your state?

2075 Ms. Coker Craig. Well, the primary --

2076 Ms. Eshoo. Who are the interests? Who are the interests  
2077 that went to the state legislature to make sure that this access  
2078 was banned?

2079 Ms. Coker Craig. My understanding is it was the big telecom  
2080 industry.

2081 Ms. Eshoo. You got it.

2082 Ms. Coker Craig. It was the large --

2083 Ms. Eshoo. That is my softball or hardball question to you.

2084 So, I think we need to put the facts on the table. And that  
2085 is that the very large interests, very large money holds sway,  
2086 and this is holding back local communities from creating a choice.

2087 In most cases, it is much cheaper, too. So, that is what is  
2088 happening in the country. If people want to stay with, stand  
2089 with their state legislature for especially screwing their local

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

2090 communities, so be it, but that is what is happening. That is  
2091 what is happening, and that is a very big thing in our country,  
2092 especially because one-third of the country is not getting what  
2093 they need.

2094 I want to ask the panel -- well, I don't have enough time.  
2095 So, I will put that question to the full panel. Your single  
2096 one best idea on how we can advance? I will put that in writing  
2097 and look forward to your response.

2098 Thank you for being here today. I think you are all part  
2099 of the solution.

2100 Ms. Eshoo. Again, I thank the chairwoman for having this  
2101 hearing.

2102 Mrs. Blackburn. The gentlelady yields back.

2103 Mr. Johnson, you are recognized for 5 minutes.

2104 Mr. Johnson. Thank you, Madam Chairman.

2105 And thanks to our panel for joining us today.

2106 I represent a very rural part of the country, the entire  
2107 eastern flank of the state of Ohio, all along the Ohio River.

2108 Broadband access is one of my top priorities. We must figure  
2109 this out. A one-size solution doesn't work everywhere in the  
2110 country. And the digital rural divide is very, very real. We  
2111 are losing a tremendous amount of intellectual capital from young  
2112 people to entrepreneurs, to you name it, kids that can't do their  
2113 homework, businesses that won't come into a rural area because  
2114 they can't get access to the internet to connect with their

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2115 customers, their suppliers, manage their employees. There is  
2116 a host of reasons why this is somewhat urgent, I would even say  
2117 in many cases desperate, situation for economic development.

2118 And some people think that it is a pie-in-the-sky luxury  
2119 to have access to high-speed internet, and that is simply not  
2120 true. In a digitized world that we live in today, where we do  
2121 business across the oceans like we used to do business across  
2122 town, you have got to have access to the internet. And I think  
2123 that starts with being able to accurately identify those areas  
2124 that are unserved and underserved. And that has been a  
2125 complicated, and yet, inadequate effort up until now.

2126 That is why I was glad to introduce the MAPPING NOW Act,  
2127 reasserting NTIA's authority to go do this. I am also pleased  
2128 that the discussion draft to reauthorize NTIA tasks the  
2129 administration with facilitating more accurate granular maps of  
2130 broadband coverage, so that we can get on with this process.

2131 Mr. Aiken and Mr. Stroup, Administrator Redl recently stated  
2132 in his testimony before the Senate Commerce Committee that, and  
2133 I quote, "NTIA has long been a leader in gathering and analyzing  
2134 broadband adoption and data, and on May 30th, 2018, NTIA published  
2135 a Request for Comment to determine the most efficient path  
2136 forward."

2137 Gentlemen, could you offer your thoughts as to what NTIA  
2138 should consider when thinking about how to get the most accurate  
2139 and reliable data to properly inform broadband investment

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2140 decisions? I don't think it is rocket science, and I am really  
2141 frustrated with the length of time and the lack of progress.

2142 Mr. Aiken, let's go with you first; then, we will come down  
2143 to Mr. Stroup.

2144 Mr. Aiken. Sure. Thank you, Congressman.

2145 We are actively engaged with NTIA on its rulemaking on  
2146 mapping efforts and appreciate their work on this issue.

2147 We share the frustration at the lack of good data out there  
2148 on broadband deployment. It means that folks who might be  
2149 eligible for the Connect America Fund aren't. And there are a  
2150 host of other problems that you accurately identified.

2151 One of the things that we think we can potentially do is  
2152 move, particularly for a fixed wireless perspective, to a polygon  
2153 method of characterizing deployment. That is something that we  
2154 think we can do without unduly burdening our smallest members.

2155 Our association is made up of mom-and-pop companies. So,  
2156 regulatory burden is a pretty significant concern. But we are  
2157 actively working towards finding solutions that will work both  
2158 for our members and for the data needs of our country.

2159 Mr. Johnson. Mr. Stroup?

2160 Mr. Stroup. We also have engaged with NTIA and encouraged  
2161 them to take advantage or to reflect the most up-to-date  
2162 capabilities, as I note with respect to the satellite industry,  
2163 the 25/3 capabilities. And also, the point that I had made  
2164 earlier about utilizing new technologies to be able to do RF

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

2165 mapping, to be able to determine where there is, in fact, a signal.

2166 Mr. Johnson. Sure. Well, like I have said, I don't think  
2167 it is rocket science, but guess what? Even if it is a rocket  
2168 science, we have got rocket science in this country.

2169 [Laughter.]

2170 We ought to be able to figure this out, and it ought not  
2171 to be this dadgum complicated.

2172 But, with that, Madam Chair, I yield back.

2173 Mrs. Blackburn. The gentleman yields back.

2174 Ms. Brooks, you are recognized for 5 minutes.

2175 Mrs. Brooks. Thank you, Madam Chairwoman, and thank you  
2176 so much for holding this really important hearing.

2177 And thank you all. I am sorry some of us have been going  
2178 back and forth between other hearings.

2179 But this is critically important. I represent Indianapolis  
2180 suburbs and rural communities in central Indiana. Not too long  
2181 ago, I had the opportunity with FCC Chair -- and one of the members  
2182 of the committee -- Carr to visit Beck's Hybrids and saw something  
2183 that was really quite amazing.

2184 And so, I guess, Mr. Aiken, and maybe Mr. May, they have  
2185 what they call FARMserver, where they have created their own  
2186 server and service to help with precision ag. And it is  
2187 simplified, but it allows their clients, not just their own  
2188 customers, but others who are participating in FARMserve, to  
2189 generate reports such as yield by soil type, yield by hybrid,

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com



2190 yield by prescription. It is seed selection streamlined,  
2191 field-focused recordkeeping, full support, taking information  
2192 from a farm office out into the field very precisely, but, then,  
2193 aggregating all of this data. And they have this massive server  
2194 system data storage up in northern Hamilton County. I was not  
2195 aware they were doing something of this level of sophistication,  
2196 although they are an incredibly tech-savvy company, and always  
2197 have been.

2198 But I am concerned about -- we talked about data security,  
2199 and that is not what I am going to go into. But their customers  
2200 and those who they are working with, I asked about whether or  
2201 not 5G, which is now being implemented in Indianapolis and some  
2202 of the surrounding areas -- you mentioned 4G. That is what, Mr.  
2203 May, made me think about 5G. This type of service could have,  
2204 I think, a dramatic impact on the ag industry. They used a WISP  
2205 called On-Ramp.

2206 Can you all talk with us? Is this happening anywhere else  
2207 in the country or are they truly unique in the country? I am  
2208 just curious, Reynolds Farm Equipment, a great John Deere dealer,  
2209 is right down the road from them. Can you all talk about this  
2210 a little bit, Mr. Aiken maybe, and you may or may not know about  
2211 this, Mr. May, in 5G. Yes?

2212 Mr. Aiken. Sure. So, thank you, Congresswoman, and I  
2213 really appreciate you going out to visit our member, On-Ramp  
2214 Indiana, and see the work that they are doing as a really small

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

2215 company, but bringing big connectivity and enabling the kind of  
2216 innovations that you just mentioned in your statement.

2217 I think this is indicative of what our members are doing  
2218 across the country. A lot of our members are actually farmers,  
2219 in addition to being broadband providers. So, they understand  
2220 what farms need in order to be able to be successful, both in  
2221 the broadband world and in the farming world.

2222 But, as far as 5G is concerned, I think we have to remember,  
2223 when we talk about 5G, that 5G is not only mobile. 5G is also  
2224 fixed wireless.

2225 Mrs. Brooks. Right.

2226 Mr. Aiken. And a lot of the same technical innovations that  
2227 we see going into the mobile space also will be in the fixed space.

2228 So, our members, if we have adequate access to spectrum, can  
2229 provide these gigabit or multi-gigabit speeds to farms who  
2230 desperately need the connectivity for big data.

2231 Mrs. Brooks. Mr. May, anything you would like to talk about  
2232 5G?

2233 Mr. May. Yes. Yes, absolutely. First of all, 5G would  
2234 bring additional capability in streaming larger sets of data.

2235 But, today, we have a similar system. It is the John Deere  
2236 Operations Center, where a John Deere farmer today is streaming  
2237 on a real-time basis from the field directly to our cloud-based  
2238 ecosystem all of their agronomic data that, then, they can share  
2239 with any of their trusted advisors in order to make better

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

2240 decisions and stream it directly back to the machine in the field.  
2241 So, as we advance the internet connectivity, that is only going  
2242 unlock more value within the field.

2243 Mrs. Brooks. Are there many companies like John Deere and  
2244 Beck's doing this across the country or is it really just the  
2245 largest? And the other thing I want to mention is, so many of  
2246 these companies are also near small towns. We often think of  
2247 urban and rural, but small towns like Pinetops and others. Do  
2248 we think we are going to get 5G to small towns, to Pinetops, North  
2249 Carolina? I mean, what are we going to do? Because I think we  
2250 are going to be jumping to 5G very fast.

2251 Mr. May. Yes, you know, our system is a global system that  
2252 extends across the globe that uses multiple different internet  
2253 capabilities. 5G, frankly, is a luxury from a data transmission  
2254 standpoint, but we are leveraging today 3G and 4G as well to do  
2255 the same thing.

2256 Mrs. Brooks. Thank you. Thank you all so much for your  
2257 testimony. I really appreciate all your work.

2258 I yield back.

2259 Mrs. Blackburn. Yields back.

2260 Mr. Bilirakis, you are recognized for 5 minutes.

2261 Mr. Bilirakis. Thank you, Madam Chair. I appreciate it  
2262 very much.

2263 I thank the panel for their testimony.

2264 One of the most important topics of discussion as we continue

**NEAL R. GROSS**

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

2265 to build new connections and upgrade systems is resiliency. We  
2266 saw what happened, of course, in Florida, Texas, and Puerto Rico.  
2267 Now we are hurricane season, 2018 hurricane season. Similarly,  
2268 other parts of the nation face their own natural disasters, not  
2269 just hurricanes. They face the threats that can impact  
2270 connectivity and slow emergency communications.

2271 Mr. Forde, as Midco continues to expand to unserved markets,  
2272 as well as upgrade existing systems, what precautions are being  
2273 taken to help ensure that these systems are resilient to natural  
2274 disasters, which for your area would be tornado threats, of  
2275 course?

2276 Mr. Forde. Yes, the first thing is, obviously, we build  
2277 a lot of redundancy into our system. Multiple fiber rings of  
2278 sizes large and small allow that technology to go back around  
2279 the ring. So, if we do have a fiber cut or an instance, that  
2280 instantly reroutes, and is the first step in keeping up for lost  
2281 service.

2282 Additionally, we have had some disasters in North Dakota  
2283 and tornadoes and flooding. We have responded with providing  
2284 free WiFi and things for those communities on an instant basis.

2285 We have some trailers and things that we do. They are our  
2286 friends. They are our customers. We do the best we can to make  
2287 sure their communications are always working and up and running  
2288 as fast as possible. If, for some reason, the main lines aren't  
2289 working, we provide alternate forms of technology to get them

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2290 up and running right away.

2291 Mr. Bilirakis. Thank you.

2292 Continuing on the top of natural disasters, Mr. Stroup, in  
2293 your written testimony you stated that satellite technology can  
2294 deploy temporary-fix installations and very small aperture  
2295 terminal antennas in the aftermath of a disaster to help  
2296 communities get reconnected. The question is, how long does it  
2297 take to deploy these systems to an impacted area? And what  
2298 actions need to be taken by consumers in order to use these  
2299 temporary systems if they do not have a preexisting relationship  
2300 with that satellite provider?

2301 Mr. Stroup. The systems can be deployed in a matter of  
2302 hours, depending upon where the equipment is located. I think  
2303 what happened in Puerto Rico is a good example, where carriers  
2304 have come forward and noted that satellite needs to be considered  
2305 an important part of the infrastructure for the rebuilding process  
2306 because of the speed and capability of the industry. For  
2307 consumers, very often it is a matter of going to a point where  
2308 there is a satellite connection. A good example is in Puerto  
2309 Rico where people lined up at a grocery store to be able to use  
2310 satellite technology. So, it is something that very often is  
2311 used in conjunction with cellular systems. So, they are  
2312 providing the backhaul where the cellular system has gone down.  
2313 With other technologies, point-to-point technologies, it is not  
2314 necessarily as applicable in terms of providing the

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

2315 point-to-point technology, but more being able to provide the  
2316 backhaul capability.

2317 Mr. Bilirakis. Okay. Very good. I appreciate it very  
2318 much.

2319 And I yield back, Madam Chair. Thank you.

2320 Mrs. Blackburn. The gentleman yields back.

2321 Mr. Cramer, you are recognized.

2322 Mr. Cramer. Thank you, Madam Chair.

2323 And thanks to all of you. My goodness, I am sitting here.

2324 As you know, I have sat here the whole time, and I have loved  
2325 every minute of it because I see solutions. I have to agree with  
2326 Ms. Eshoo. She said, you look at the six of you and you find  
2327 the solution to the problem.

2328 I was thinking about the Precision Agriculture Connectivity  
2329 Act, and what would that task force that the FCC will set up,  
2330 should we pass this bill, look like. And I think it looks a lot  
2331 like this, quite honestly.

2332 We do have competing technologies collaborating to create  
2333 a ubiquitous network that is not reliant on any one of you. It  
2334 is reliant on all of you and several others. That has, I think,  
2335 been both the opportunity and the challenge, that we do have  
2336 competing technologies. We didn't have that with the Interstate  
2337 Highway System. We need a ubiquitous transportation system to  
2338 move products to market and people from coast to coast. And so,  
2339 we have this very public highway system. When it was time to

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

2340 bring electricity to the farm, the REA did it beautifully, but  
2341 there weren't competing technologies. Today, of course, there  
2342 are more community-based power sources, things like that, but  
2343 not at the time.

2344 But you all are in something where there is a lot of  
2345 competition, and you all are in something that needs the product.

2346 How it gets there is not as relevant as that it gets there, right?

2347 So, I think we have the makings of a great collaboration among  
2348 competitors.

2349 We hear a lot now today, of course, about satellite. We  
2350 hear a lot about cable and fiber and fixed wireless and  
2351 community-based, all of those things. And then, we haven't  
2352 talked a lot about mobile, but some, and not a lot about nomadic,  
2353 but, of course, some. All of that has got to work together to  
2354 get it there.

2355 But I want to ask you, Ms. Word, as I hone in a little bit  
2356 on the tremendous opportunity that I see in telemedicine in rural  
2357 America. With 36 hospitals in North Dakota, and still a lot of  
2358 space between them, the bill we were able to do a couple of years  
2359 ago, it allowed Universal Service funds to be used, for example,  
2360 to connect nursing facilities, which I think was a good step in  
2361 the right direction.

2362 One of the things, though, we always hear about -- and God  
2363 bless Mr. Welch for raising the fact that some of this does cost  
2364 money, right, particularly in unserved and underserved and maybe

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2365 profit centers it requires some money. And we provided some and  
2366 more, and probably need to do more.

2367 But, at the same time, we often don't talk about the savings  
2368 or the opportunities. For example -- and this is what I want  
2369 to get to you -- in your testimony you talked about that  
2370 telemedicine, the benefit of it, the value of it. Has there ever  
2371 been a cost-benefit analysis of people being able to stay at home  
2372 longer or maybe be in a community-based health center longer  
2373 because they have ubiquitous access to the experts somewhere else?

2374 Because we always talk about the cost, not necessarily about  
2375 the savings.

2376 Ms. Word. I don't know about an official study. I am sure  
2377 they have been done. I know our facility, and also Grande Ronde  
2378 Hospital, the one that is 65 miles away, has looked at the number  
2379 of miles saved. That translates to gallons of gas, the hotel  
2380 rooms, the time off of work that, whether it is the patient or  
2381 family member, don't have to take.

2382 Most of the savings I think is for the hospital and probably  
2383 our primary care providers. They are able to assist these  
2384 specialists. Often, they will do their visits side-by-side with  
2385 the primary care provider in the room.

2386 Mr. Cramer. Sure. What I wonder, because you talked about  
2387 reimbursement issues, right --

2388 Ms. Word. Yes.

2389 Mr. Cramer. -- and what is not allowable. It would seem

**NEAL R. GROSS**

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



2390 to me that we ought to take a real serious look at how, whether  
2391 it is private insurance or Medicare in most cases, is reimbursing,  
2392 how they might save by reimbursing something that they might not  
2393 think is healthcare, if that makes sense.

2394 Ms. Word. Absolutely. Reimbursement is a huge issue, both  
2395 for the originating site and the distant site. I will tell, we  
2396 don't really even consider for us, being the originating site,  
2397 reimbursement. We often don't even bill. Whoever we are working  
2398 with on the other end, they pay us \$25 per patient, a max of \$100  
2399 a day. We could do six, eight, twelve patients; we will get \$100.

2400 We are about the patient and what makes it better for them.  
2401 Healthwise, they often feel better if they are at home and they  
2402 are with their loved ones, their spouse, their children, more  
2403 comfortable with being at home.

2404 Mr. Cramer. Excellent.

2405 And I am just going to wrap up my last 10 seconds here with  
2406 the aggies. Thank you, John Deere. We haven't talked about  
2407 unmanned aerial vehicles and the opportunity for imagery there,  
2408 and the ability to use -- the beautiful thing about rural America,  
2409 besides the fact that they grow enough food for the world, is  
2410 that they do have a lot of available spectrum. It might be owned  
2411 by somebody or licensed by somebody else or just not available,  
2412 but it is available. If we can find ways to enhance the imagery,  
2413 there is no reason we shouldn't be able to change the world with  
2414 precision agriculture, and I know that you all are about doing

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

2415 that.

2416 And I have overstepped my time, Madam Chair. I yield back.

2417 Mrs. Blackburn. The gentleman yields back.

2418 Mr. Long, you are recognized.

2419 Mr. Long. Thank you, Madam Chairwoman.

2420 As a point of personal privilege, just for the record, I  
2421 would like to state that, as everyone knows, Arthur Bryant's  
2422 Barbeque in Kansas City would make Memphis and Texas barbeque  
2423 want to run and hide.

2424 [Laughter.]

2425 So, I just want to get that out.

2426 Mr. Aiken and Mr. Forde, in this Congress I have introduced  
2427 H.R. 4817, the PEERING Act. The focus is on improving broadband  
2428 infrastructure in rural America. The bill would set up a matching  
2429 grant program at MIT to make peering centers more resilient where  
2430 ones already exist and create new ones where they are needed,  
2431 mainly across the Midwest, where Arthur Bryant's Barbeque is.

2432 Do you think this bill would help combat the strain on rural  
2433 providers having to deliver consistently increasing amounts of  
2434 internet traffic, including high bandwidth video transmissions?

2435 Mr. Aiken?

2436 Mr. Aiken. Sure. Thank you for the question, Congressman.

2437 And I have to say, also, for the record, that I will be making  
2438 a road trip through Tennessee, Missouri, and Kentucky this summer.

2439 So, I will have to sample the barbeque.

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

2440 Mr. Long. We will look for your report.

2441 [Laughter.]

2442 Mr. Aiken. I will submit that for the record.

2443 [Laughter.]

2444 But I appreciate the question. The cost of backhaul is a  
2445 very significant cost for a lot of rural providers in terms of  
2446 getting to that point where they can peer with other providers.  
2447 So, I really appreciate your efforts to try to do things to reduce  
2448 that.

2449 Mr. Long. What else can be done in more rural areas? I  
2450 have several rural areas in my 10 and a fraction counties. A  
2451 lot of it is rural America, and I don't think that the kids trying  
2452 to do their homework should be affected differently than the kids  
2453 in the city. So, what else can we do in more rural areas to keep  
2454 service high quality and the speed fast?

2455 Mr. Aiken. From our perspective, Congressman, the answer  
2456 is spectrum, and spectrum done in a way that makes sense for small  
2457 companies. We have a ton of small providers out there in rural  
2458 America providing broadband now, but the spectrum they are using  
2459 is crowded. Like I mentioned previously, we have folks who have  
2460 customers within range, potential customers within range of  
2461 radios right now, but insufficient spectrum to do it.

2462 Mr. Long. Okay. Thank you.

2463 And, Mr. Forde, do you think this bill that I have introduced  
2464 would help combat the strain on rural providers having to deliver

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

2465 consistently increasing amounts of internet traffic, including  
2466 high bandwidth video transmissions?

2467 Mr. Forde. Obviously, we are delivering gigabit speeds  
2468 across all of our footprint from Bowman to Battineau and Williston  
2469 to Wahpeton in North Dakota.

2470 So, I wanted to make sure I said "hi" to my Congressman Cramer  
2471 up there as well. Excuse me, Congressman Long.

2472 But, yes, we certainly really believe that increasing those  
2473 speeds would be great. One of the ways that we can really do  
2474 that is, again, as Mr. Aiken said, more spectrum. Again, we  
2475 really like the 2.5 gigahertz band of spectrum to put out that  
2476 speed because it allows for interference protections and also  
2477 to get through some of those tough, hard-to-reach areas through  
2478 trees and woods, and things like that. So, yes, we constantly  
2479 have efforts to increase speeds all across our footprint.

2480 Mr. Long. And what else can be done in more rural areas  
2481 to keep service high quality and speeds fast?

2482 Mr. Forde. I think that the continued deregulation to allow  
2483 us to keep focused on investing in our networks is very helpful.

2484 Allowing us not to have teams in rooms and even a floor full  
2485 of people working on some of those regulations allows us to do  
2486 what we do, and we do real broadband and continue to invest for  
2487 our customers.

2488 Mr. Long. Thank you.

2489 And I didn't realize Senator Cramer had joined us, but thank

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2490 you for pointing that out.

2491 I appreciate everything this committee does, and has been  
2492 doing, in promoting broadband deployment.

2493 I would like to submit for the record a letter from the  
2494 Missouri Electric Cooperatives about what they have been doing  
2495 in Missouri.

2496 [The information follows:]

2497

2498 \*\*\*\*\* INSERT 10\*\*\*\*\*

2499 Mr. Long. And last, but not least, I would love to get  
2500 bipartisan support for my bill, H.R. 4817, the PEERING Act, and  
2501 hope to work with my colleagues on the other side of the aisle  
2502 on this.

2503 Madam Chairwoman, I yield back.

2504 Mrs. Blackburn. The gentleman yields back.

2505 Mr. Costello, you are recognized, 5 minutes.

2506 Mr. Costello. Mr. Forde, as you state in your testimony,  
2507 you acknowledge that government assistance is sometimes necessary  
2508 to reach areas of the country where there is no business case  
2509 for private investment. But, to efficiently leverage USF funds  
2510 to the areas that need it most, we need the federal government  
2511 to collect and disseminate data that more accurately reflects  
2512 the digital divide. This is why Representative Loeb sack and I  
2513 introduced the Rural Wireless Access Act, signed into law with  
2514 the help of this committee in the spring. This bill directs the  
2515 FCC to establish consistent data collection practices for mobile  
2516 service coverage. Can you highlight some of the problems that  
2517 arise from overbuilding with federal dollars and how this  
2518 committee can steer agencies to more efficiently focus efforts  
2519 on the truly underserved areas of the country?

2520 Mr. Forde. Yes. I think Midco, as a company that is already  
2521 providing robust service, and some of the communities already  
2522 had multiple providers, and, of course, we had been overbuilt  
2523 in many of those communities with those federal dollars. What

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

we have seen is there are still areas just outside those fairly large communities -- places like Mitchell, South Dakota, population of approximately 15,000, had multiple providers there providing a high level of speed. But, yet, there are still people just not far from town that are unserved or underserved in that area. So, to the extent that we can focus on those first, that will be a much better use of those federal dollars, and let's make sure that we do that in a technology-neutral manner. Whether it is a fiber connection, whether it is the high-frequency cable, or the fixed wireless technology to reach those, let's use the best tool that we have in the toolbox.

Mr. Costello. Mr. Stroup, I recently introduced the WIFI STUDY Act to highlight the economic benefits that result from unlicensed spectrum use in assisting internet traffic management, and how that will help us realize the benefits of an interconnected world with more efficient transmission of data. Can you talk about some of the roles that unlicensed spectrum can play in closing the digital divide in rural America? Second, can you also specifically touch on how unlicensed spectrum may play in the satellite industry?

Mr. Stroup. Yes. Certainly, at least one of our members is working to show the value of community WiFi connected by satellite systems. WiFi, as you know, utilizes unlicensed spectrum. I think it is a combination of those technologies that provides an opportunity to be able to provide low-cost services

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2549 in many of the areas that do not otherwise have access to service,  
2550 and that is a great combination of unlicensed spectrum and  
2551 satellite backhaul capability.

2552 Mr. Costello. Mr. Aiken, do you have anything to add on  
2553 the issue of unlicensed spectrum and the role it can play in  
2554 closing the digital divide in rural America?

2555 Mr. Aiken. Absolutely. Thank you, Congressman.

2556 Unlicensed spectrum is absolutely critical in closing the  
2557 digital divide. The large majority of our members who are small  
2558 businesses who have been, for lack of a better word, locked out  
2559 of the license spectrum play for too long, have utilized  
2560 unlicensed spectrum in predominantly the 2.4 gigahertz and the  
2561 5 gigahertz bands to provide service. So, as I said in my  
2562 testimony, additional unlicensed spectrum would be an incredible  
2563 boon for rural broadband.

2564 Mr. Costello. Very good. Thank you. I yield back.

2565 Mrs. Blackburn. Mr. Flores, you are recognized.

2566 Mr. Flores. Thank you, Madam Chairman, for hosting this  
2567 great panel.

2568 And, Panel, I appreciate your testimony. I echo what Mr.  
2569 Cramer said. It has been a fascinating discussion so far.

2570 In terms of what Congress has done in this area to look at  
2571 rural broadband, we have helped auction off spectrum for 5G  
2572 deployment; we have streamlined the permitting processes; we are  
2573 hoping to change the regulations, so we can put more broadband

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)



satellites in the sky; we are encouraging technological innovation, and we are simply funding government agencies and programs that drive broadband development. With that said, it is reassuring to see you all get together, as Mr. Cramer said, and offer us what we think are the solutions, what could possibly be the solutions for the future.

My district, 90 percent of the population lives in about 5 percent of the footprint. So, in terms of population, it is mostly urban and suburban. On the other hand, 10 percent of the population lives in 95 percent of the land area and it is rural.

And so, broadband rollout is incredibly important to me in terms of representing that 10 percent of the population that has more limited access to broadband.

Congress last year was working hard to deal with this when it took my Radio Broadband Consumer Protection Act, which ensured that broadcasters were protected in the repack to follow the first of its kind broadcaster incentive auction. In 2012, the broadcast incentive auction, which was raised \$19 billion, was part of Congress' effort to grow broadband development and access, but that legislation had an unforeseen impact, because at the time nobody realized that the radio broadcasters had not been protected. So, our legislation took care of that part of the repack of the spectrum, so that the wireless rollout for 5G and advanced 4G could continue on time. And that became part of the RAY BAUM'S Act, and that has become law now.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2599 Moving on to the next section, which has to do with  
2600 regulations, last January I introduced H.Res. 701. That called  
2601 for environmental and historic reviews conducted by the FCC or  
2602 any entity regulated by the FCC to be limited to the area of impact.

2603 This resolution was part of this committee's effort to build  
2604 out broadband. It promotes a more practical and efficient model  
2605 for the modern deployment of broadband while respecting the  
2606 oversight of historical and environmental impacts.

2607 I would like to start with that last issue first regarding  
2608 regulatory reform. So, I would like to go through the entire  
2609 panel. And this is the question: how important is it for  
2610 broadband buildout that federal requirements be proportional to  
2611 the actual area being disturbed?

2612 Mr. Stroup, we will start with you. It is probably not as  
2613 important for you as it is for the other folks on the panel.

2614 Mr. Stroup. Yes, certainly because the satellite  
2615 industry's issues are somewhat different than the terrestrial  
2616 systems.

2617 Mr. Flores. Right.

2618 Mr. Stroup. Our infrastructure is in the sky.

2619 Mr. Flores. Right.

2620 Mr. Stroup. So, for us, it is more a matter of ensuring  
2621 that there is access to spectrum and that any technology that  
2622 is adopted be technology-neutral. In terms of deployment of the  
2623 infrastructure, certainly we utilize fiber systems, but that is

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2624 not typically an impediment to the deployment of our systems.

2625 Mr. Flores. That is what I thought. How about in terms  
2626 of your ground-based stations? Have you had any regulatory  
2627 impacts in this regard?

2628 Mr. Stroup. So, we do have issues, but it is not a major  
2629 impediment to the industry.

2630 Mr. Flores. Okay. That is good to hear.

2631 Mr. Forde?

2632 Mr. Forde. Certainly we have, as I may have mentioned  
2633 earlier, we have had some issues with the Army Corps and the  
2634 permitting process in those environmental issues in reaching  
2635 those tough areas. We also do feel that the fixed wireless tool  
2636 can be very helpful in reaching some of those. So, those rules  
2637 are also allowing us to do that without too much burden on our  
2638 company. But, certainly, those regulations do slow us down in  
2639 doing rural broadband.

2640 Mr. Flores. Okay. Mr. Aiken?

2641 Mr. Aiken. Yes, I would agree with what Mr. Forde said.  
2642 It is tough for a mom-and-pop business to have to pay \$5,000  
2643 for a permit in order to hang a small radio on an existing tower.

2644 So, we appreciate the help that Congress and the FCC have been  
2645 affording us on permit streamlining.

2646 Mr. Flores. Mr. May?

2647 Mr. May. Yes, we would agree. I think that speeding up  
2648 the process would certainly help reach the areas that don't have

**NEAL R. GROSS**

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

(202) 234-4433

www.nealrgross.com

2649 service, and I think it is broader than we think. And we do those,  
2650 but we are doing it in a sustainable way.

2651 Mr. Flores. Okay. I would like to go to the next question.  
2652 I will ask you all to answer supplementally.

2653 Ms. Coker Craig, you may have a response to that. Ms. Word,  
2654 I don't know if it impacts you or not.

2655 Mr. Stroup, I suspect the satellite industry faces its own  
2656 very unique regulatory impediments. Can you address the  
2657 hindrances for deployment that the satellite industry faces?

2658 Mr. Stroup. Can you repeat that?

2659 Mr. Flores. Yes. Can you address the hindrances for  
2660 deployment that the satellite industry faces?

2661 Mr. Stroup. Issues for deployment that the industry --

2662 Mr. Flores. Yes, hindrances.

2663 Mr. Stroup. Again, going back to the point that I made  
2664 before, in terms of deployment, the biggest issue that we have  
2665 is access to spectrum. We have a number of companies that have  
2666 announced plans for deployment of their next generation  
2667 technology, both GEO systems and LEO systems. So, the processing  
2668 at the Commission is certainly an issue. We are going through  
2669 a process with expediting small satellite licensing. But I think  
2670 that the key points for us, again, are technology neutrality and  
2671 access to spectrum.

2672 Mr. Flores. Okay. Thank you, Madam Chairman. I yield  
2673 back the balance of my time.

**NEAL R. GROSS**

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

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

2674 Mrs. Blackburn. The gentleman yields back.

2675 Seeing that there are no further members wishing to ask  
2676 questions, I thank all the witnesses for being here today. We  
2677 appreciate your participation so much.

2678 Before we conclude, I ask unanimous consent to enter the  
2679 following documents into the record:

2680 And I will start with you, Mr. Doyle. You have some to enter?

2681 Mr. Doyle. Yes. Thanks, Madam Chair.

2682 I know that it has been pointed out, the money that Congress  
2683 has given to the Department of Agriculture's Rural Utility  
2684 Service, and the FCC on the Rural Health Care Program. I just  
2685 want point out that the problem in rural America is way bigger  
2686 than those efforts.

2687 I want to submit for the record an FCC study here that shows  
2688 it will take \$40 billion to build out 98 percent of the country.

2689 So, if we give the Agriculture Department the same amount we  
2690 gave them this year, \$600 million, it would take 66 years before  
2691 we got to 98 percent of the country. So, that is just a drop  
2692 in the bucket, and we need to do a lot better.

2693 So, I would like to submit this study for the record.

2694 Mrs. Blackburn. Without objection, so ordered.

2695 [The information follows:]

2696

2697 \*\*\*\*\* COMMITTEE INSERT 11\*\*\*\*\*

2698 Mrs. Blackburn. Unanimous consent to issue this following  
2699 list of documents: a letter from ITTA; Wireless Industry  
2700 Association; American Hospital Association; USTelecom; NTCA; the  
2701 Rural Broadband Association; ACT, the App Association; CCA;  
2702 Advanced Communications Law and Policy Institute; CTIA; a blog  
2703 post from NCTA; a letter from Rural Broadband Caucus members to  
2704 House appropriators; Chairman Walden's slides; a letter from  
2705 several associations supporting the AIRWAVES Act, from Mr. Lance;  
2706 a letter to Mr. Olson from NTCA, submitted by Mr. Olson; a letter  
2707 to Mr. Olson from the Wireless Industry Association, submitted  
2708 by Mr. Olson; a letter to Mr. Long from the Association of Missouri  
2709 Electric Cooperatives, from Mr. Long, and a letter to Mr. Loeb sack  
2710 from the Chariton Valley Electric Cooperative, from Mr. Loeb sack.

2711 Without objection, so ordered.

2712 [The information follows:]

2713

2714 \*\*\*\*\* INSERT 12\*\*\*\*\*

2715 Mrs. Blackburn. Pursuant to committee rules, I will remind  
2716 the members that they have 10 business days to submit additional  
2717 questions.

2718 And to you, our panel, if you will respond to those in writing  
2719 within 10 business days of receipt?

2720 Mrs. Blackburn. Seeing that there is no further business  
2721 to come before the committee this morning, the subcommittee is  
2722 adjourned.

2723 [Whereupon, at 12:32 p.m., the subcommittee was adjourned.]