

From One Sector to Another: Applying a Proactive Framework to the FCC’s Network Resiliency Efforts

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I. INTRODUCTION

You wake up in the middle of the night to your spouse shaking you. The destructive storms that have become all too familiar in your life are once again requiring you to evacuate to the basement of your home. As you walk down the stairs, the electricity shuts off, and you can hear the winds screaming against the side of the house. Just as you come down the stairs, you remember the last time this happened required you to stay in the basement for hours longer than you anticipated. Your spouse hands you their phone, and it shows that service has once again been lost. How will you stay connected with first responders? Do the batteries still work in your emergency radio? Let's hope that this storm quickly passes through.

In advance of such a situation, federal officials can make decisions that will help ensure communities remain connected to the communications network during extreme weather events. The Federal Communications Commission (FCC), through its support of network resiliency across the United States, can act to ensure network providers build networks that provide resilient services. Given the changing dynamics of extreme weather in the United States, the FCC should act to identify communication networks that need more support before destruction occurs.¹

The FCC may find inspiration under a statutory mandate of the Department of Energy to meet these upcoming demands on our communications network. The Energy Policy Act of 2005 requires the Department of Energy to analyze the electric grid every three years to provide insight into areas of the grid that may need strengthening.² Congress acted to provide mechanisms to build new electric grid infrastructure, particularly giving the Department of Energy the ability to designate areas of the electric grid as National Interest Electric Transmission Corridors (National Interest Corridor).³ The Department of Energy, every three years, must review congestion data on the areas of the electric grid and designate a National Interest Corridor if an area is too congested.⁴ This proactive approach could inform how the FCC reviews the resiliency of the communications network in the United States.

The increasing prevalence of extreme weather events caused by climate change has harsh consequences for the future of the network communications infrastructure if the United States does not prepare. Extreme weather events will cause increasing damage in the coming decades, which poses risks to communications network infrastructure across the continental

1. See Daniel G. Huber & Jay Gullede, *Extreme Weather & Climate Change: Understanding the Link and Managing the Risk*, CTR. FOR CLIMATE & ENERGY SOLS., at 3 (Dec. 2011), <https://www.c2es.org/document/extreme-weather-and-climate-change-understanding-the-link-and-managing-the-risk/> [<https://perma.cc/7PU2-ZP54>] (explaining how the “narrative of extreme events over recent decades provides a few snapshots of a larger statistical trend toward more frequent and intense extreme weather events”).

2. See Energy Policy Act of 2005, 16 U.S.C. § 824p(a) (2005).

3. See *id.* § 824p(a)(2).

4. See *id.*

United States.⁵ In addition to the increased number of extreme weather events, sea level changes may carry consequences for potential shifts in human population that which would affect network usage in coastline areas and thus increase the need to adjust infrastructure to maintain network resiliency as coastline populations are forced to move inland.⁶

The FCC's actions to update the communications grid in preparation for extreme weather events created by climate change are inadequate and threaten Americans with loss of communications service during extreme weather. The Department of Energy has acted in response to the exact same threats from climate change outlined above by reviewing the power grid on a consistent basis.⁷ The FCC should adopt the proactive approach that the Department of Energy exercises in reviewing the electric grid in consultation with state governments and industry stakeholders. Proactive solutions are necessary as unpredictable extreme weather creates vulnerabilities in the communications network across the United States.

This Note will analyze how the FCC can pull ideas from the Department of Energy's actions mandated by the Energy Policy Act of 2005 to develop their own regulatory framework to strengthen the resiliency of the United States' communications network. Part II.A will provide factual background on how extreme weather events affect the stability of the communications network. Part II.B and II.C will provide background on the FCC's work on the resiliency of communication networks and the recent start on analyzing the geographical reach of the current communications network. Part II.D will discuss the Department of Energy's statutory responsibility to collect data on the electric grid. Part III.A will analyze how extreme weather events have highlighted the vulnerability of certain areas of the communications network and how the FCC's current efforts are inadequate to address the growing issue. Part III.B and III.C will continue with proposals on how the FCC can adopt proactive measures, like the Department of Energy's reviews of the electric grid, to address vulnerabilities in the communications network.

5. See Jessica Weinkle et al., *Normalized hurricane damage in the continental United States 1900-2017*, 1 NATURE SUSTAINABILITY 808, 811 (2018) (indicating that as economic growth continues, "the United States should thus expect much greater hurricane damage in its future"); Michael Goss et al., *Climate change is increasing the likelihood of extreme autumn wildfire conditions across California*, 15 ENV'T RSCH. LETTERS 1, 12 (2020) (stating that "climate change can thus be viewed as a wildfire 'threat multiplier' amplifying natural and human risk factors that are already prevalent throughout California").

6. Teddy Grant, *UN secretary-general warns of impact of sea level rise, could cause 'mass exodus' of populations*, ABC NEWS (Feb. 15, 2023, 6:35 PM), <https://abcnews.go.com/US/secretary-general-warns-impact-sea-level-rise-cause/story?id=97231697> [<https://perma.cc/Q4XQ-MSJD>] (noting that "nearly 900 million people who live in coastal zones" are at high risk for rising sea elevations).

7. See OFF. OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY, U.S. DEP'T OF ENERGY, ANN. U.S. TRANSMISSION DATA REV. MAR. 2018, at 1 (2018), <https://www.energy.gov/oe/articles/annual-us-transmission-data-review-march-2018> [<https://perma.cc/FJ37-Q4Q2>].

II. BACKGROUND

A. *Extreme Weather Events Affect the United States' Communications Network*

When severe weather strikes a community, costs to repair can be upwards of hundreds of millions of dollars and leave extensive damage to a communications network.⁸ Scientific American reported in 2020 that Internet service “interruptions caused by extreme weather events sap billions of dollars annually from the global economy.”⁹ In 2017, Hurricane Maria’s “heavy winds caused extensive damage to . . . communications, transportation, and energy infrastructure” in Puerto Rico.¹⁰ Hurricane Maria alone brought “damage that resulted in millions of people experiencing wireless, broadband, cable, and other telecommunications outages for months.”¹¹ The National Oceanic and Atmospheric Administration’s Office for Coastal Management states that between 1980 and 2021, the U.S. spent approximately \$2.6 trillion on damages from “weather and climate disasters” as of August 2023.¹² Companies providing network communications services have recognized the need to strengthen their equipment in response to extreme weather events brought on by climate change.¹³ Damages from more frequent extreme weather events across the United States will continue to bring high repair costs over the coming decades.¹⁴

Certain areas of the continental United States are more vulnerable to weather-related disruptions in their communications network, given their proximity to coastlines or disaster-prone regions. For example, Louisiana’s communications network was left in disrepair for weeks following Hurricane Zeta in October 2020 and left the local population vulnerable to life-

8. See U.S. GOV’T ACCOUNTABILITY OFF., GAO-21-297, FCC ASSISTED IN HURRICANE MARIA NETWORK RESTORATION, BUT A CLARIFIED DISASTER RESPONSE ROLE AND ENHANCED COMMUNICATION ARE NEEDED 26 (2021), <https://www.gao.gov/assets/gao-21-297.pdf> [https://perma.cc/U27K-KMEH] (finding that the FCC spent \$601 million dollars repairing Puerto Rico and the U.S. Virgin Islands in the years following Hurricane Maria).

9. Daniel Cusick, *Wireless Technology Could Help Climate-Proof the Internet*, SCI. AM. (July 3, 2020), <https://www.scientificamerican.com/article/wireless-technology-could-help-climate-proof-the-internet/> [https://perma.cc/YJC6-D56Y].

10. *Extreme Weather and Climate Change*, CTR. FOR CLIMATE & ENERGY SOLS., <https://www.c2es.org/content/extreme-weather-and-climate-change/> [https://perma.cc/RYP6-VUV5] (last visited Jan. 12, 2023).

11. U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 8, at 23.

12. *Hurricane Costs*, NAT’L OCEANIC ADMIN.’S OFFICE FOR COASTAL MGMT., <https://coast.noaa.gov/states/fast-facts/hurricane-costs.html> [https://perma.cc/6DHY-6YDM] (last visited Nov. 8, 2023).

13. See Diana Goovaerts, *Here’s how AT&T, Verizon, Consolidated are prepping their networks for climate change*, FIERCE TELECOM (Mar. 11, 2022, 11:00 AM) <https://www.fiercetelecom.com/telecom/att-verizon-consolidated-dish-preparing-their-networks-climate-change> [https://perma.cc/LS9R-G9AX] (discussing how AT&T, Verizon, and Consolidated Communications are all planning to update technology used to provide communications services in response to climate change).

14. See generally Weinkle et al., *supra* note 5, at 811.

threatening crises.¹⁵ These outages not only brought economic implications for the region but also further reached social impacts by affecting hospitals, local schools, and emergency responses from first responders.¹⁶ Even regions of the United States that currently have a low risk for natural disasters may become vulnerable to the loss of communications capabilities as extreme weather becomes more unpredictable if infrastructure is not upgraded.

While extreme weather will never be completely predictable, the strain on the United States communication networks is already present.¹⁷ Extreme weather can leave communities without reliable wireless connection for periods of time after the storm has cleared, which only highlights the lasting impacts of a weak communications infrastructure.¹⁸

B. FCC's Past Work on Ensuring Network Resiliency

The FCC has historically focused on ensuring universal communication service to every corner of the United States.¹⁹ The Communications Act of 1934 stated that its purpose is “to make available, so far as possible, to all people of the United States . . . a rapid, efficient, Nation-wide, . . . communication service with adequate facilities.”²⁰ The FCC has created a resilient network to withstand natural disasters through creating resiliency designed funding programs for regions struck by extreme weather and instituting the Mandatory Response Initiative.²¹ Further, the FCC has built reporting procedures for service providers when communications service is disrupted.²²

15. See Bailey Basham, *The South's communication infrastructure can't withstand climate change*, SOUTHERLY (Jan. 8, 2021) <https://southerlymag.org/2021/01/08/the-souths-communication-infrastructure-cant-withstand-climate-change/> [https://perma.cc/FR43-8BWU].

16. See *id.*

17. See *id.*

18. See *id.* (noting that a Louisiana resident had unreliable Internet connection for many weeks following Hurricane Zeta).

19. See *Universal Service*, FED. COMM'NS COMM'N, <https://www.fcc.gov/general/universal-service> [https://perma.cc/WJS7-KXU5] (last visited Nov. 13, 2022).

20. Communications Act of 1934, 47 U.S.C. § 151 (1934).

21. *Bringing Puerto Rico Together (Uniendo a Puerto Rico) Fund and the Connect USVI Fund*, UNIVERSAL SERV. ADMIN. CO. [hereinafter *Bringing Puerto Rico Together*], <https://www.usac.org/high-cost/funds/bringing-puerto-rico-together-uniendo-a-puerto-rico-fund-and-the-connect-usvi-fund/> [https://perma.cc/TUE9-AW73] (last visited Nov. 10, 2022); see Resilient Networks, et al., *Report and Order and Further Notice of Proposed Rulemaking*, 37 FCC Rcd 8059, para. 23-25 (2022) [hereinafter *Resilient Networks Report & Order, FNRPM*].

22. See *Network Outage Reporting System (NORS)*, FED. COMM'NS COMM'N, <https://www.fcc.gov/network-outage-reporting-system-nors> [https://perma.cc/FWU9-EBD3] (last visited Nov. 18, 2022).

1. Disaster Response

The FCC is responsible for promoting uniform industry best practices and ensuring proper procedures are followed after network disruption.²³ The unreliability of these networks following natural disasters was prominent in the aftermath of Hurricane Katrina, as outlined by a report sent to the FCC which reviewed the hurricane's disruption of communication networks.²⁴ However, with regards to network resiliency, the report recommended that the FCC streamline requirements for restoring service (without addressing how to upgrade equipment so that the need for restoration is less likely).²⁵ Reports of this magnitude show the importance that the FCC has placed on response to natural disasters, but also highlight the reactive nature of seeking improvements in the communications network infrastructure after it's too late.

For example, the wireless industry adopted a Wireless Network Resiliency Cooperative Framework, which was codified by the FCC in large part on July 6, 2022 as the Mandatory Disaster Response Initiative.²⁶ The July 2022 order requires all "facilities-based mobile wireless providers" to comply with this framework.²⁷ The mandatory framework includes "providing for reasonable roaming under disaster arrangements . . . fostering mutual aid among wireless providers during emergencies . . . and improving public awareness and stakeholder communications on service and restoration status."²⁸ The framework binds participants to: 1) improve roaming during natural disasters; 2) improve assistance to other wireless providers during disasters; 3) work with local authorities to develop plans for disasters; 4) work with consumer groups to improve knowledge of how consumers can prepare for disasters; and 5) improve communication lines to the public for restoration updates.²⁹ The FCC's step in the right direction here creates a flexible mandate for wireless providers to deal with natural disasters, but does not make clear what metrics the FCC will specifically use to ensure compliance with the framework.

Outside of the Mandatory Disaster Response Initiative, targeted responses to disruptions have been done on a case-by-case basis through the establishment of funding programs. The FCC has created funding programs designed to directly support areas where network infrastructure is already under threat from extreme weather, such as the Bringing Puerto Rico Together

23. *See id.*

24. *See* Letter from Nancy J. Victory, Chair, Indep. Panel Reviewing the Impact of Hurricane Katrina on Commc'ns Networks, to Kevin J. Martin, Chairman, Fed. Commc'ns Comm'n (June 12, 2006) <https://transition.fcc.gov/pshs/docs/advisory/hkip/karrp.pdf> [<https://perma.cc/4VWW-S4SF>] (noting "that lack of effective first responder communications after the storm revealed inadequate planning, coordination, and training on the use of technologies that can help restore emergency communications").

25. *See id.* at 33.

26. Resilient Networks Report & Order, FNRPM, *supra* note 21, at para. 23.

27. *Id.* at para. 3.

28. *Id.* at para. 5.

29. *See id.* at para. 5.

(Uniendo a Puerto Rico) Fund and Connect USVI Fund (PR/USVI Fund).³⁰ The PR/USVI fund helps “support the restoration, expansion and upgrade of fixed and mobile communications networks” in Puerto Rico and the U.S. Virgin Islands.³¹ Since the fund’s creation, the FCC has allocated over \$1 billion to strengthen mobile networks in those two areas.³² The funding, broken into two stages, has gone directly to carriers in a mix of emergency funding to restore service, and funding to ensure communications networks stay online during future extreme weather.³³

To receive Stage 2 funding, a provider must have a Disaster Preparation and Response Plan, which includes “details on how a carrier will strengthen its infrastructure, ensure network diversity and backup power, monitor its network and plan for an emergency.”³⁴ Requirements of this nature are a positive step for building resilient infrastructure and require providers to proactively plan for disasters. However, these funding programs have only been applied retroactively to at-risk areas.

To further the PR/USVI fund, the FCC adopted a Further Notice of Proposed Rulemaking (“FNPRM”) on October 27, 2022, which proposed “extending universal service support for mobile and fixed service providers beyond 2023.”³⁵ Following Hurricane Fiona’s destruction, the FNPRM acknowledged that “infrastructure in areas prone to hurricanes must be built to withstand storm damage and have redundant capabilities.”³⁶ However, this action to provide interim support to the region is limited to Puerto Rico and the U.S. Virgin Islands.³⁷ Here, the FCC is recognizing a need for additional support by providing resources after the destruction of critical network infrastructure. The FCC also commented on buildout requirements for resilient network infrastructure, requiring forty percent buildout by December 2024 and twenty percent for each year after for carriers who are awarded fixed support to build out their network infrastructure.³⁸ This demonstrates the challenges of upgrading the infrastructure in an expedient manner while also recognizing the burden that upgrades create on providers and local authorities.

These actions indicate that the FCC’s approach to disaster control does not predominantly include proactive infrastructure requirements across the continental United States. Frameworks and funding have been adopted for some disaster-prone regions, but more is necessary to combat unpredictable extreme weather.

30. See *Bringing Puerto Rico Together*, *supra* note 21; see also The Uniendo a Puerto Rico Fund and the Connect USVI Fund, et al., *Order and Notice of Proposed Rulemaking*, 33 FCC Rcd 5404, para. 1 (2018).

31. *Bringing Puerto Rico Together*, *supra* note 21.

32. *See id.*

33. *See id.*

34. *Id.*

35. The Uniendo a Puerto Rico Fund and the Connect USVI Fund; Connect America Fund, *Further Notice of Proposed Rulemaking*, 37 FCC Rcd 13411, para. 15 (2022).

36. *Id.* at para. 1.

37. *See id.* at para. 2.

38. *See id.* at para. 21.

2. Outage Reporting

In addition to responding to network disruptions following a disaster, the FCC has other mechanisms in place for reactively responding to outages to quickly reestablish service. The FCC has created a set of guidelines for service providers when responding to everyday outages. In 2004, the foundations of the FCC's Network Outage Reporting System (NORS) addressed "the critical need for rapid, complete, and accurate information on significant communications service disruptions."³⁹ Providers are required to report outages that affect 911 facilities within four hours, or any outage that potentially affects 900,000 user minutes and completely removes service within twenty four hours.⁴⁰ The FCC notes that the Public Safety and Homeland Security Bureau's Cybersecurity and Communications Reliability Division analyzes the received outage data to review for trends and provides solutions to prevent outages in the future.⁴¹

Besides NORS, the FCC has systems in place to allow for data transfer to occur as natural disasters create network outages. The FCC discusses a program known as the Disaster Information Reporting System (DIRS), which allows "service providers . . . to voluntarily report to the Commission their communications infrastructure status, restoration information, and situational awareness information specifically during times of crisis."⁴² The FCC states that NORS and DIRS together are "vital public safety tools" which prepare the FCC to act quickly with federal and local authorities in emergency situations.⁴³ These programs together show the FCC's willingness to work with service providers and create the best mechanisms for data collection.

However, the FCC suggests that smaller providers have trouble participating in this program and states that providers report outage information in DIRS on a voluntary basis once the system is activated.⁴⁴ The FCC expressly sought comment on whether making DIRS mandatory is within their legal authority and recognized the potential burdens for providers to file their information while remaining focused on reconnecting service.⁴⁵ As of the time of this writing, the future of rulemaking proceedings considering changes to NORS remains pending. However, the FCC sought comment on how data collected from NORS could potentially identify "broadband outage trends," which may suggest their inclination to use this tool in the future to spot areas of the network infrastructure that need additional support.⁴⁶

These outage reporting requirements provide data for the FCC to later review, especially on the when and where of network disruptions. While not

39. See *Network Outage Reporting System (NORS)*, *supra* note 22.

40. See *id.*

41. See *id.*

42. See *Resilient Networks et al., Notice of Proposed Rulemaking*, 36 FCC Rcd 14802, para. 5 (2021) [hereinafter *Resilient Networks NPRM*].

43. *Id.* at para. 27.

44. *Id.* at para. 27.

45. *Id.* at para. 29.

46. *Id.* at para. 30.

every disruption can be planned for, the guidelines for disruptions highlight that there is a continuous need for infrastructure improvements. Further, DIRS, even though it helps increase the FCC's awareness of the status of communication infrastructure during a disaster, does not help the FCC work proactively with service providers to alleviate strain on communication infrastructure.

C. FCC's Statutorily Mandated Efforts on Broadband Data Collection

The FCC has recognized “the need for accurate data pinpointing where broadband service is available, and where it is not available, has never been greater.”⁴⁷ In 2019, the FCC began the Digital Opportunity Data Collection (later becoming the Broadband Data Collection), which aimed to “gather geospatial broadband service availability data specifically targeted towards advancing our universal service goals.”⁴⁸ This data collection has evolved since its creation in response to, in the words of FCC Chairwoman Jessica Rosenworcel, “complaints that we lack detailed maps to tell us exactly where broadband is—and is not—available.”⁴⁹

1. Data Collection Process and a New Statutory Mandate

Congress, in response to a lack of organized data on the availability of broadband service, passed the Broadband Deployment Accuracy and Technological Availability Act (Broadband DATA Act) in March 2020 which required the FCC to create maps of broadband service across the United States.⁵⁰ These maps must be updated at least twice a year.⁵¹ Congress likely intended for the Broadband DATA Act to boost the FCC's focus on providing broadband service to rural Americans.⁵² However, the statute will benefit all

47. *Broadband Data Collection*, FED. COMM'NS COMM'N, <https://www.fcc.gov/BroadbandData> [<https://perma.cc/3CJL-QVPR>] (last visited Nov. 6, 2022).

48. Establishing the Digital Opportunity Data Collection; Modernizing the FCC Form 477 Data Program, *Report and Order and Second Further Notice of Proposed Rulemaking*, 34 FCC Rcd 7505, 2 (2019) [hereinafter *Digital Opportunity Data Collection*].

49. Jessica Rosenworcel, *Status Update: Mapping Where Broadband Is—and Is Not—Available in the U.S.*, FED. COMM'NS COMM'N (June 30, 2022), <https://www.fcc.gov/news-events/notes/2022/06/30/status-update-mapping-where-broadband-and-not-available-us> [<https://perma.cc/L8WE-YXVC>].

50. See Broadband Deployment Accuracy and Technological Availability Act, 47 U.S.C. §§ 641-46 (2020).

51. See *id.* § 642(c)(3) (requiring the FCC to “update the maps created . . . not less frequently than biannually using the most recent data”).

52. See *Bill to Improve Broadband Data Maps Signed Into Law*, U.S. SENATE COMM. ON COM., SCI., & TRANSP. (Mar. 23, 2020), <https://www.commerce.senate.gov/2020/3/bill-to-improve-broadband-data-maps-signed-into-law> [<https://perma.cc/F596-RKY2>] (discussing how many rural communities lack access to broadband and how the DATA Act will “help deploy service to the estimated 20 million Americans without access to broadband”).

stakeholders in the process and requires establishing a “crowdsourcing process” for the data collection efforts.⁵³

The Broadband DATA Act mandates that the FCC create a process through which stakeholders “may submit specific information about the deployment and availability of broadband Internet access services in the United States on an ongoing basis.”⁵⁴ The statute, thus, does not mandate input from certain stakeholder groups but requires the FCC to receive information from anyone who chooses to submit it. This part of the statute also highlights that Congress likely intended for this mandate to continue into the future. The goal of rural broadband access and expansion of universal service generally will need to be a continual goal that the FCC weaves into its broader actions. Finally, this section also leaves open how the FCC will choose to interact with these stakeholders and to define “specific.”⁵⁵ This leaves service providers with an avenue to ensure their inputs are heard in the process and also leaves unclear what kind of information is required per the statute. The FCC could expand the scope of information collected from stakeholders to include information related to the climate resiliency of their infrastructure.

Following passage of the Broadband DATA Act, Acting Chairwoman Jessica Rosenworcel established a Broadband Data Task Force to lead the FCC’s efforts on collecting and compiling data on broadband availability across the United States.⁵⁶ Since then, the Broadband Data Task Force held technical workshops to ensure that providers of data understood how to upload the information.⁵⁷ These workshops demonstrate the FCC’s goals for collecting a broad set of data and encouraging as many industry stakeholders as possible to take part in the process as outlined by the Broadband DATA Act.

Following these trainings, the Broadband Data Task Force opened windows for facilities-based broadband service providers to file their data with the FCC.⁵⁸ The FCC’s data collection previously relied on service providers, the public, and other governmental entities to provide information on broadband service availability directly to the FCC, and the new filing

53. *Id.*

54. 47 U.S.C. § 644(b)(1).

55. *Id.*

56. See Press Release, Federal Communications Commission, Acting Chairwoman Rosenworcel Establishes Broadband Data Task Force (Feb. 17, 2021), <https://www.fcc.gov/document/rosenworcel-establishes-broadband-data-task-force> [<https://perma.cc/WYF8-ELPF>].

57. See Federal Communications Commission, *Broadband Data Task Force Webinar*, YOUTUBE (Aug. 12, 2021), <https://www.youtube.com/watch?v=G8Ov3nJxlnc> [<https://perma.cc/E6DQ-M7T3>]; Federal Communications Commission, *Broadband Data Collection Tribal Governments’ Technical Assistance Workshop*, YOUTUBE (Dec. 8, 2021), <https://www.youtube.com/watch?v=MoZln03GT5w> [<https://perma.cc/FN3H-XVXF>].

58. See Inaugural Filing Window for Broadband Data Collection Has Opened, *Public Notice*, 37 FCC Rcd 7656, 1 (2022) [hereinafter *Inaugural Filing Window*]; The Broadband Data Task Force Announces the Opening of the Second Broadband Data Collection Window, *Public Notice*, 37 FCC Rcd 15161, 1 (2022).

system continued each stakeholder's involvement.⁵⁹ The FCC does not reveal which stakeholders ended up submitting data, which may raise issues later if certain stakeholders are included less in the process than needed.

On November 18, 2022, the FCC created its first National Broadband Map, which is the "most detailed data on broadband availability the FCC has ever collected or released."⁶⁰ This map will meet Congress' needs as stated in the Broadband DATA Act but will surely lead to further decisions on the usage of this data and policy recommendations. The FCC states that the "Broadband Data Collection (BDC) program will give the FCC, industry, state, local, and Tribal government entities, and consumers the tools they need to improve the accuracy of existing maps."⁶¹ The FCC has not clearly stated its own specific goals for the data; however, the FCC will surely use the Broadband Map to continue its mission of providing universal broadband service.

D. The Department of Energy's Statutorily Mandated Response to Instability in the Electric Grid

As a result of an unprecedented energy blackout, Congress passed the Energy Policy Act of 2005, which requires the Department of Energy to proactively study the electricity grid every three years.⁶² The Department of Energy's Office of Electricity states that "a secure and resilient power grid is vital to national security, economic security, and the services Americans rely upon."⁶³ The regulation of the energy grid is complex and incorporates the Federal Energy Regulatory Commission ("FERC"), which regulates the interstate sale of electricity and transmission rates.⁶⁴ To ensure grid stability, especially as strain on the grid grows, Congress required the Department of Energy to identify places of concern on the grid in a proactive manner.⁶⁵

59. See Digital Opportunity Data Collection, *supra* note 48, at 2; Inaugural Filing Window, *supra* note 58, at 1.

60. FCC National Broadband Map, FED. COMM'NS COMM'N, <https://broadbandmap.fcc.gov/home> [<https://perma.cc/D8TW-5DA9>] (last visited Apr. 9, 2023); Press Release, Federal Communications Commission, National Broadband Map Fact Sheet, 1 (Nov. 18, 2022), <https://www.fcc.gov/document/national-broadband-map-fact-sheet> [<https://perma.cc/PDL9-MJZM>].

61. Broadband Data Collection, *supra* note 47.

62. See Energy Policy Act of 2005, 16 U.S.C. § 824p(a) (2005).

63. Office of Electricity, U.S. DEP'T OF ENERGY, <https://www.energy.gov/oe/office-electricity> [<https://perma.cc/3SDW-J37N>] (last visited Nov. 5, 2022).

64. See What FERC Does, FED. ENERGY REGUL. COMM'N, <https://www.ferc.gov/what-ferc-does> [<https://perma.cc/V8UG-DFEB>] (last visited Dec. 13, 2023).

65. 16 U.S.C. § 824p(a)(2).

1. History of the United States Electric Grid

The electric grid in the United States began as a collection of local electricity transmission lines in the late 19th century.⁶⁶ At the start of the 20th century, “AC and long-distance transmission encouraged the consolidation of electric utilities” and began the development of interstate transmission lines.⁶⁷ However, the localized operation of electric utilities changed rapidly, where “by the late 1920s, the sixteen largest electric power private holding companies, . . . controlled more than 75% of all U.S. generation.”⁶⁸ The rapid growth of interstate power transmission led to confusion among the state regulatory utility commissions regarding which bodies could regulate certain flows of electricity, which resulted in the Supreme Court holding that states were unable to regulate interstate transmission under the dormant commerce clause.⁶⁹

In response to the Supreme Court’s decision, Congress passed the Federal Power Act in 1935 and assigned the Federal Power Commission, now FERC, the power to regulate interstate transmission of electricity.⁷⁰ FERC is “an independent agency that regulates the interstate transmission of electricity, natural gas, and oil.”⁷¹ FERC approves rates for sales of electricity in interstate commerce and aims to support investment in the nation’s electricity grid infrastructure.⁷² The energy grid is now also regulated through a collection of regional operators known as regional transmission organizations, which oversee the electric grid in their region and manage wholesale power sales.⁷³

The United States recognized energy production as one of its top priorities in 2005 with the passage of the Energy Policy Act of 2005, and the

66. See Alexandra B. Klass, *The Electric Grid at a Crossroads: A Regional Approach to Siting Transmission Lines*, 48 U.C. DAVIS L. REV. 1895, 1910 (2015) (noting that San Francisco was the first city in the world in 1879 that had an electricity generating station which distributed electricity to numerous lamps in the city).

67. *Id.* at 1911.

68. *Id.* at 1914.

69. See *id.*; Pub. Utils. Comm’n of R.I. v. Attleboro Steam & Elec. Co., 273 U.S. 83, 89 (1927) (holding an order from the Public Utilities Commission of Rhode Island that created a schedule of prices for the interstate sale of electricity an “imposition of a direct burden upon interstate commerce, from which the state is restrained by the force of the commerce clause, it must necessarily fall, regardless of its purpose”).

70. See Federal Power Act, 16 U.S.C. § 824(b)(1) (2012); Klass, *supra* note 66, at 1914.

71. *What FERC Does*, *supra* note 64.

72. See *Electric*, FED. ENERGY REGUL. COMM’N, <https://www.ferc.gov/electric> [<https://perma.cc/8XCJ-U7CL>] (last visited Jan. 17, 2023); *Electric Transmission*, FED. ENERGY REGUL. COMM’N, <https://www.ferc.gov/electric-transmission> [<https://perma.cc/984B-FEUP>] (last visited Jan. 17, 2023).

73. See Alexandra B. Klass & Elizabeth J. Wilson, *Interstate Transmission Challenges for Renewable Energy: A Federalism Mismatch*, 65 VAND. L. REV. 1801, 1808 (2012).

issue has continued as one of intense political debate.⁷⁴ Strains on the electricity grid affect everyday life through blackouts, which occur for a variety of reasons but can have serious consequences for end users who rely on electricity supply for safety reasons.⁷⁵ New sources of electric power are debated and are balanced with their cost and potential for strain on the electricity grid (among many other factors), especially as the effects of climate change bring attention to clean energy sources.

2. The Department of Energy's Framework in Establishing National Interest Electric Transmission Corridors

On August 14, 2003, the largest electricity blackout in the nation's history occurred after a group of power plants and transmission lines shut off.⁷⁶ Following this, the instability in the grid from the offline power plants and transmission lines resulted in additional power plant outages that grew to affect customers across the United States and Canada.⁷⁷ Some of the estimated 50 million customers lost power for only a few hours, but the power outages continued for several days in some areas.⁷⁸ The blackouts resulted in estimates of billions of dollars of lost productivity and revenue.⁷⁹ The catastrophe prompted Congress to request briefing on the causes of the incident, with the Government Accountability Office recommending greater regulation and security for the growing electricity markets in its report to the Committee on Governmental Affairs.⁸⁰ The severe consequences of the blackouts also prompted investigations from the federal government and state governments, including a joint U.S.-Canadian team.⁸¹

74. See Presidential Statement on Signing the Energy Policy Act of 2005, 41 WEEKLY COMP. PRES. DOC. 1267 (Aug. 8, 2005) <https://www.govinfo.gov/content/pkg/WCPD-2005-08-15/pdf/WCPD-2005-08-15-Pg1267-2.pdf> [<https://perma.cc/TK9A-ZEGQ>] (President Bush writing in his signing statement that “this legislation promotes dependable, affordable, and environmentally sound production and distribution of energy for America’s future”); Energy Policy Act of 2005, 16 U.S.C. § 824p(a) (2005); *Presidential Debate at Belmont University in Nashville, Tennessee*, COMM’N ON PRESIDENTIAL DEBATES, <https://www.debates.org/voter-education/debate-transcripts/october-22-2020-debate-transcript/> [<https://perma.cc/CC6R-CW3N>] (last visited Nov. 5, 2022) (Then President Donald Trump and then presidential candidate Joseph Biden debate over usage of evolving sources of energy and whether the United States is truly energy independent.).

75. U.S. GOV’T ACCOUNTABILITY OFF., GAO-04-204, *ELECTRICITY RESTRUCTURING: 2003 BLACKOUT IDENTIFIES CRISIS AND OPPORTUNITY FOR THE ELECTRICITY SECTOR 9* (2003), <https://www.gao.gov/assets/gao-04-204.pdf> [<https://perma.cc/B4UN-4FW8>] (noting that the 2003 Blackout, at that point the largest in the nation’s history, affected an estimated 50 million customers, air and ground transportation systems, water systems, 911 communications, and cellular networks).

76. See *id.* at 1-2.

77. See *id.* at 2.

78. See *id.* at 1-2.

79. See *id.* at 2.

80. See *id.* at 1-4.

81. U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 75, at 9.

In response to the 2003 blackouts' wide impacts, Congress passed the Energy Policy Act of 2005, which stated the Department of Energy "in consultation with affected States, shall conduct a study of electric transmission congestion."⁸² The statute allows the Secretary of the Department of Energy to label any area of the electricity grid as a National Interest Corridor as long as the area is currently experiencing or will experience "energy transmission capacity constraints or congestion."⁸³ The Secretary, in considering whether to label an area of the electricity grid as a National Interest Corridor, must consider, among other factors related to the energy security of the region, whether the region is "jeopardized by reliance on limited sources of energy."⁸⁴ Both the consideration of potential constraints and a review of the vulnerabilities of the electric grid emphasize the forward-looking nature of this study.

When the Department of Energy designates a National Interest Corridor, the Energy Policy Act of 2005 gives FERC the authority, after opportunities for notice and comment, to issue permits as a backstop to traditional state siting authority, the application for building the new transmission line does not serve-end users in the state, or when a state regulatory commission failed to act within one year on an application for new transmission lines.⁸⁵ While this regime does not allow FERC to immediately act following a National Interest Corridor designation, it provides an avenue for FERC to, in a reasonable time, act instead of the State commission if the construction of improved transmission lines is delayed.⁸⁶ FERC cannot unilaterally order the construction of new transmission lines but is given greater capacity to take actions to work towards decongestion of the grid if other actors in the process fail to do so.⁸⁷

The initial study, released in 2006, shows how the FCC can better construct reviews of this kind. The study, as mandated by the Energy Policy Act of 2005, examined the electricity transmission across the entire country using historical analysis and modeling of transmission lines.⁸⁸ The study relied on a collection of data pulled from sources including testimony from regional transmission organizations, reports from FERC and the Department of Energy, staff reports from state public service commissions, and publicly available data from regional transmission organization and individual

82. Energy Policy Act of 2005, 16 U.S.C. § 824p(a)(1) (2005); *see* U.S. DEP'T OF ENERGY, NATIONAL ELECTRIC TRANSMISSION CONGESTION STUDY, v (2020), <https://www.energy.gov/oe/articles/2020-national-electric-transmission-congestion-study> [https://perma.cc/R4NE-XB6B].

83. 16 U.S.C. § 824p(a)(2).

84. *Id.* § 824(p)(a)(4) (this phrase has never been directly defined, but suggests the region is reliant on either relatively few sources of energy or unreliable sources of energy).

85. *See id.* § 824(p)(b).

86. *See id.*

87. *See id.*

88. *See* U.S. DEP'T OF ENERGY, NATIONAL ELECTRIC TRANSMISSION CONGESTION STUDY, vii (2006), https://www.energy.gov/sites/default/files/oeprod/DocumentsandMedia/Congestion_Study_2006-9MB.pdf [https://perma.cc/83EZ-LLA2].

transmission projects.⁸⁹ The modeling used in the study incorporated simulations of future estimated congestion at both the eastern and western halves of the country by looking at various years within the following decade.⁹⁰ The 2006 study even proposed areas where new sources of energy could be built to improve the “economy, and enhance the Nation’s energy security and fuel diversity.”⁹¹ The Department of Energy sought comment on “any and all aspects of the study and the potential designation of National Corridors,” in addition to: whether designating certain National Corridors would be in the public interest, how the Department of Energy should establish geographic boundaries for designated National Corridors, and how to best allocate costs of proposed transmission facilities.⁹² Following the 2006 study, the Secretary of the Department of Energy designated the Mid-Atlantic National Corridor and the Southwest Area National Corridor as National Interest Corridors.⁹³

Following the first National Electric Transmission Congestion Study in 2006 and its designation of two National Interest Corridors, stakeholders challenged the legal authority of the Department of Energy and FERC to act in response to their designations. The Fourth Circuit held that FERC did not have statutory authority to act after a state denied a permit within a one-year timeline, but only when “action on a permit application has been held back continuously for more than one year.”⁹⁴ Here, FERC had issued a final rule following notice and comment rulemaking procedures, which was challenged by two state public service commissions and two community interest organizations.⁹⁵ This interpretation by the courts limited the ability of FERC to act quickly to build new transmission lines, with the Fourth Circuit holding that Congress would have directly stated if it intended to allow FERC to issue permits “*every time* a state commission denies a permit in a national interest corridor.”⁹⁶ Additionally, this case further highlights how stakeholders will challenge rulemaking procedures that are unfavorable to their business.

Two years later, the Ninth Circuit vacated the Department of Energy’s first National Interest Corridor designation, holding that the Department of Energy did not provide analytical models to state governments or directly solicit the input of state government leadership on the creation of the study as required by statute.⁹⁷ Here, the Court held that the Department of Energy

89. *See id.* at 95-103.

90. *See id.* at 27, 36.

91. *See id.* at 53, 55, 56, 58 (proposing areas for the development of wind energy in the Dakotas and Minnesota and proposing areas for the development of nuclear energy in the Southeastern United States).

92. *See id.* at 59-60.

93. *See* U.S. DEP’T OF ENERGY, NATIONAL ELECTRIC TRANSMISSION CONGESTION STUDY, vii (2009), https://www.energy.gov/sites/default/files/Congestion_Study_2009.pdf [<https://perma.cc/AE37-HPZE>].

94. *Piedmont Env’t Council v. Fed. Energy Regul. Comm’n*, 558 F.3d 304, 315 (4th Cir. 2009).

95. *See id.* at 309.

96. *Piedmont Env’t Council*, 558 F.3d at 314 (emphasis in original).

97. *See* *Cal. Wilderness Coal. v. U.S. Dep’t of Energy*, 631 F.3d 1072, 1085-86, 1095 (9th Cir. 2011).

failed to meet the Energy Policy Act of 2005's mandate of preparing the study "in consultation with affected States" when the agency used a deliberate "decisionmaking process that was contrary to that mandated by Congress and one that deprived the Department of Energy of timely substantive information."⁹⁸ This case highlights that courts will likely look unfavorably upon agencies who do not work with state authorities when such cooperation is suggested by statute.

The Department of Energy, since the Energy Policy Act of 2005's inception, has continued to conduct congestion studies but has not designated a National Interest Corridor since the initial findings from the 2006 study.⁹⁹ In 2022, the Department of Energy garnered attention with its plan to use its revived statutory authority under the Energy Policy Act of 2005 as modified by the Infrastructure Investment and Jobs Act.¹⁰⁰ The congestion studies are now referred to as a National Transmission Need Study and the Biden administration released a 2023 study in October 2023.¹⁰¹ The recent statutory modifications, after mixed success in the past, suggests that proactive approaches of this kind will likely evolve as agencies struggle with responding to the climate change crisis if state regulatory bodies refuse to enact change.¹⁰²

The Department of Energy has separately conducted annual transmission data reviews, which provide "an integrated summary of publicly available data and information on . . . factors affecting the U.S. transmission system."¹⁰³ The Department of Energy cites a "broad responsibility for developing and supporting the implementation of energy policies" as authority for these annual reports.¹⁰⁴ While these reviews give no conclusions

98. 16 U.S.C. § 824(p)(a)(1); *Cal. Wilderness Coal.*, 631 F.3d at 1095.

99. See U.S. DEP'T OF ENERGY, *supra* note 93, at vii; U.S. DEP'T OF ENERGY, NATIONAL ELECTRIC TRANSMISSION CONGESTION STUDY, 5 (2015), https://www.energy.gov/sites/default/files/2015/09/f26/2015%20National%20Electric%20Transmission%20Congestion%20Study_0.pdf [<https://perma.cc/TAM7-PXSF>]; U.S. DEP'T OF ENERGY, NATIONAL ELECTRIC TRANSMISSION CONGESTION STUDY, 2 (2020), <https://www.energy.gov/oe/articles/2020-national-electric-transmission-congestion-study> [<https://perma.cc/8FE6-BZZ5>].

100. See Daniel Moore, *States Balk at Permitting Plan's 'National Interest' Power Lines*, BLOOMBERG L. (Sept. 16, 2022, 5:30 AM), <https://news.bloomberglaw.com/environment-and-energy/states-balk-at-permitting-plans-national-interest-power-lines> [<https://perma.cc/F3XQ-LU2P>] (discussing how the designation of National Corridors could support the connection of new sources of clean energy and how statutory changes would permit FERC to issue construction permits); Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, 135 Stat. 429, 933-34, 939 (2021), <https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf> [<https://perma.cc/NS44-8HWP>].

101. U.S. DEP'T OF ENERGY, NATIONAL TRANSMISSION NEEDS STUDY, ii (2023), https://www.energy.gov/sites/default/files/2023-12/National%20Transmission%20Needs%20Study%20-%20Final_2023.12.1.pdf [<https://perma.cc/B394-3QJX>].

102. See Moore, *supra* note 100 (noting the Biden administration's sense of urgency with creating new electric transmission lines).

103. See OFF. OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY, U.S. DEP'T OF ENERGY, *supra* note 7, at 1.

104. *Id.* (the report specifically cites the Energy Policy Act of 2005's requirement for a study of the electric grid every three years as statutory support).

from the analyzed data, the reviews bring awareness to stakeholders of the operation costs and congested areas of the electric grid.¹⁰⁵ These reviews include an analysis of the constraints and costs of congestions for all of the regional transmission organizations.¹⁰⁶ In early 2022, the Department of Energy announced that new proactive studies of the electric grid would be used to inform designations of National Interest Corridors and incentives for building a resilient network.¹⁰⁷

Together, these two methods of obtaining and relaying data to the public highlight the recent efforts to inform policymakers and the public on the nation's energy infrastructure. The data collection and posted studies also highlight that the Department of Energy is actively proposing solutions to meet incoming crises with our electricity grid. This proactive approach, if applied to the communications network, would help the FCC understand current vulnerabilities and ongoing changes in the network.

III. ANALYSIS

A. Extreme Weather Created by Climate Change Highlights the Urgency of Updating the Communications Network Through a Proactive Framework like the Department of Energy's

The increasing prevalence of extreme weather events in certain areas of the country highlights the stress that communications networks will bear in the coming decades. For example, the increasing economic impact of hurricanes shows the vulnerabilities of communications networks on coastlines across the southern and eastern borders of the continental United States.¹⁰⁸ The FCC has taken steps in the right direction with the creation of the PR/USVI Fund, which recognizes and responds to a vulnerable area of the communications infrastructure.¹⁰⁹ However, this fund retroactively responds to harm, and funds of this nature are not present in areas of the United States that will face a similar threat of damage from extreme weather in the coming decades.

The FCC's focus on coastline areas of the United States is necessary, but the FCC should also evaluate how to prevent high-cost repairs from destroyed communication networks before the damages occur. With the unpredictable nature of extreme weather, the scope of potential improvements should be nationwide but with a focus on current disaster-prone regions like southern coastlines. The FCC should continue retroactive response efforts to extreme weather events with a future focus, pursuant to the Broadband DATA

105. *See id.*

106. *See id.* at 45.

107. Building a Better Grid Initiative To Upgrade and Expand the Nation's Electric Transmission Grid To Support Resilience, Reliability, and Decarbonization, 87 Fed. Reg. 2769, 2771 (Jan. 19, 2022).

108. *See* Weinkle et al., *supra* note 5, at 811.

109. *See Bringing Puerto Rico Together*, *supra* note 21.

Act, on using forward-looking data to work with industry stakeholders to prevent damages to the nation's network infrastructure from extreme weather.

The harm to vulnerable regions, like the Virgin Islands, from extreme weather highlights the importance of building a resilient communications network in the United States and its territories. The FCC's recent actions are a step in the right direction, such as building a map of where service is available, but the FCC should also proactively consider the costs of ensuring a resilient communications infrastructure survives extreme weather events. For example, the FCC's efforts towards building up DIRS have allowed the flow of data when disaster strikes, but the data is not informing officials/the agency how to prevent outages under circumstances in which DIRS is activated.¹¹⁰ As the effects of climate change disproportionately impact the communication networks of various regions of the country, especially coastal regions, the FCC's current framework should evolve to address the need for resilient networks in light of extreme weather.¹¹¹ More than ever, the importance of having the infrastructure present coincides with the need for the FCC to ensure that the current infrastructure is managed well during future extreme weather events.

The Energy Policy Act of 2005's statutory requirement for the Department of Energy to conduct three-year studies of the electricity grid provides a proactive framework for the FCC to apply in tackling the vulnerabilities of the communications network to extreme weather events related to climate change.¹¹² The Department of Energy studies' requirement for consultation with state stakeholders and a proactive approach to analyzing future congestion of the electric grid should be continually evolving in the FCC's Broadband Data Collection requirements under the Broadband DATA Act with an emphasis on network resiliency.¹¹³ Not only will this bring long-lasting solutions, but the FCC should continuously evolve these parameters into their approach for reviewing the communications network going forward. The FCC's collection of stakeholder data during the open submission windows demonstrated how the focus can be evolved to account for a proactive approach with increased participation.¹¹⁴ The FCC can then engage industry stakeholders in developing proactive solutions for the future of network resiliency as data is collected through open submission windows.

B. The FCC Should Adopt the Department of Energy's Strategy in Driving Proactive Solutions for Network Resiliency in Preparation for Extreme Weather

The Department of Energy's approach actively engages grid stakeholders in a comprehensive review of the nation's energy infrastructure to facilitate broad solutions to building grid reliability. The Department of

110. See Resilient Networks NPRM, *supra* note 42, at para. 34.

111. See Grant, *supra* note 6.

112. See Energy Policy Act of 2005, 16 U.S.C. § 824p(a) (2005).

113. See 16 U.S.C. § 824p(a)(1); Broadband Deployment Accuracy and Technological Availability Act, 47 U.S.C. §§ 641–646 (2020); *Cal. Wilderness Coal.*, 631 F.3d at 1095.

114. See Digital Opportunity Data Collection, *supra* note 48, at 2.

Energy's approach alone has not resulted in the new construction of transmission lines since the only designated National Interest Corridors later had the designations vacated by court judgment, but the overall approach has brought more awareness to properly managing the electric grid in the face of congestion.¹¹⁵ While the Department of Energy's ability to act towards solutions has been hampered by the courts in the past, these efforts inform how the FCC should approach setting proactive standards for reviewing the nation's communications infrastructure and acting on funding solutions to build reliability in the face of extreme weather.

1. The FCC Should Proactively Study Areas of the United States Where Network Resiliency Will Be Compromised in Coming Decades

The FCC's ongoing Broadband Data Collection efforts should evolve to include efforts to proactively study areas of the country where network resiliency will change in the coming decades due to destructive weather events brought on by climate change. The Broadband DATA Act mandates that the FCC "shall prioritize implementing the fabric for rural and insular areas of the United States."¹¹⁶ Within the statute, the "fabric" refers to locations where providers may install fixed broadband service.¹¹⁷ The Broadband DATA Act statutorily mandated data collections provide a mechanism through which the FCC can focus on areas of the country that will be hampered by extreme weather in the coming decades. If the FCC carefully organizes the collected data and institutes reoccurring reviews, it will see how the communications infrastructure changes over time. Following extreme weather, the FCC can review how the network is affected and use collected data to target funding towards strengthening vulnerable areas in the future.

Outside of collecting broadband data, the FCC should adopt the Department of Energy's strategy of using its broad statutory authority to conduct annual reviews of the communications network, like in the annual transmission reviews.¹¹⁸ The FCC could specifically cite its requirement from Congress to create a process through which information can be submitted on an "ongoing" basis for annual reviews.¹¹⁹ This solution will bring administrative costs, but Congress would likely support funding going toward a new proactive approach given the mission of the FCC and the Broadband DATA Act to provide universal, reliable service to the United States.¹²⁰

115. See *Cal. Wilderness Coal.*, 631 F.3d at 1095.

116. 47 U.S.C. § 642(b)(1)(C).

117. Rosenwerfel, *supra* note 49.

118. See OFF. OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY, U.S. DEP'T OF ENERGY, *supra* note 7, at 1.

119. See Broadband Deployment Accuracy and Technological Availability Act, 47 U.S.C. § 644(b)(1) (2020) (mandating that the FCC create a process for individuals to "submit specific information about the development and availability of broadband Internet access service in the United States on an ongoing basis").

120. See *Universal Service*, *supra* note 19; *Bill to Improve Broadband Data Maps Signed Into Law*, *supra* note 52.

Making these reviews publicly available would encourage providers to expand networks, highlight where service is lacking or at risk of damage from extreme weather, and encourage the FCC to seek to expand the communications network in conjunction with service providers and state regulatory agencies.

2. The FCC Should Continue to Work with Service Providers to Proactively Build Robust Communication Networks in Compromised Areas

The FCC should also inform service providers of findings from data collection efforts. State regulators can assist in carrying out this function, but future service needs should be continually assessed. Service providers will know best which sections of their network are vulnerable to damage from extreme weather. In the long term, the FCC should aim to ensure that data on the expansion and resiliency of the communications network flows both ways.

Outside of annual reviews, the FCC should improve the collection of its outage reporting data to understand where networks are most affected by outages, especially from extreme weather. Even if outages do not result from extreme weather, the FCC can use this information to rebuild aging networks in preparation for potential extreme weather in the future. Summarizing this data can also serve as a helpful tool for service providers, in addition to helping the FCC understand where potential funding opportunities exist to build network resiliency before extreme weather strikes.

The FCC could also create funds for vulnerable areas of the United States, like the coastlines, to proactively build network resiliency. Further, the FCC should apply the framework used in the Bringing Puerto Rico Together Fund and Connect USVI funds to require carriers across the United States (particularly in areas that will be affected by flooding and extreme weather over the coming decades) to submit Disaster Preparation and Response Plans.¹²¹ Creating these plans has precedent from FERC, which initiated rulemaking to direct regional transmission organizations to submit one-time reports on how the providers will “determine exposure to extreme weather hazards, estimate the costs of impacts, and develop mitigation measures to address extreme weather risks.”¹²² The FCC could take similar actions to require service providers to set aside a current amount of their own funding or develop responsive strategies to extreme weather, at a minimum.

Service providers will argue against further requirements for building up their network without support or funding from the FCC. Service providers may also object to the FCC allowing any information on service outages or annual reviews to become public knowledge, as it may impact how consumers view the quality of their service provider. The FCC, to keep transparent communication lines open with service providers and other stakeholders,

121. *Bringing Puerto Rico Together*, *supra* note 21.

122. One-Time Informational Reports on Extreme Weather Vulnerability Assessments; Climate Change, Extreme Weather, and Electric System Reliability, 87 Fed. Reg. 39414, 39415 (July 1, 2022) (to be codified at 18 C.F.R. pt. 141).

would likely not self-select to make any of the information public if privacy concerns arise. However, service providers may opt to conform with FCC regulations to boost their image among customers as providing resilient service (especially for customers in vulnerable areas). Separately, building resilient service will work towards creating a new industry standard for the government and the private providers working together to build network resiliency.

C. The FCC Should Ensure State Regulators and Service Providers Across Vulnerable Regions are Included in Broadband Data Collection Efforts

Much like the Department of Energy's usage of public information to create the congestion studies mandated by the Energy Policy Act of 2005, the FCC's usage of broadband data from service providers will inform decisions on areas of the communication network that need upgrades.¹²³ The FCC does not have a statutory mandate to work with states in this manner in the Broadband DATA Act, but Congress (or service providers) may unfavorably respond if states disapprove of proposed solutions. Collecting this data from state regulators and service providers, especially those in vulnerable areas, should occur alongside their direct involvement in proposals for the best solutions. The FCC should ensure that the data reviews are accurate, done on a regular basis, and used to build network resiliency, which requires long-term opportunities for stakeholders to submit data on the communications network. The FCC has demonstrated its ability to convene industry stakeholders in the collection of data but should continuously improve its ability to drive solutions to build a resilient network in the face of extreme weather.

1. The FCC Should Proactively Aim to Ameliorate Concerns from Local Providers

For any policy change to remain effective and keep a court from overturning the agency's decisions, the FCC should continue to hear the concerns of local providers and stakeholders directly in the process. While the FCC has no statutory obligation under the Broadband DATA Act to work directly with stakeholder groups in the same way as the Energy Policy Act requires, the Department of Energy's studies have been held accountable for not properly considering state regulatory perspectives.¹²⁴ This suggests that the FCC should act to ensure that there are open communication channels with providers and state regulators. Working with stakeholder groups, especially those that may need funding in the near future, in conjunction with the established data collection efforts, may give legitimacy to proposed solutions to extreme weather and prevent future legal disputes.

123. See U.S. DEP'T OF ENERGY, *supra* note 88, at vii.

124. See Energy Policy Act of 2005, 16 U.S.C. § 824p(a)(1) (2005); *see also* Cal. Wilderness Coal., 631 F.3d at 1085-86, 1095 (9th Cir. 2011).

The Department of Energy, in annual transmission reviews, has made sure to collect data from a variety of stakeholder groups.¹²⁵ The FCC should similarly work directly with state regulatory entities to ensure that broadband data, which can be used for furthering resiliency policies, is accurate. The FCC declined to make clear exactly which stakeholders submitted data during the two open submission windows, and doing so may provide more legitimacy to policies developed from the map in the future. Ensuring that submitting data is accessible to all stakeholders will bring a more cohesive response to the resiliency of our communication networks.

2. The FCC Should Build Mechanisms to Permit a Continual Flow of Data Between the Agency and Providers

One of the limitations of the Department of Energy's ability to designate National Interest Corridors is that the statutory language only mandates a study every three years.¹²⁶ With the rate of technology change and the need for rapid infrastructure strengthening given the urgency of extreme weather events, the FCC should liberally construe "ongoing" to build a continuous relationship with stakeholders as required in the Broadband DATA Act.¹²⁷ The statute leaves open how often the data submissions from service providers must be, and the FCC should follow the Department of Energy's framework in following a regular timeline for the exchange of information. The FCC has already taken steps to build a regular flow of information to the Broadband Data Map but should similarly build a regular review schedule to analyze the map for impacts from extreme weather.¹²⁸

The Department of Energy's annual transmission studies recognize the rapidly changing nature of the electricity grid and provide updated data to stakeholders who drive solutions in the field. Now that the FCC has the mechanisms to create a map of broadband service in the United States, there is nothing preventing the FCC from reviewing the map on a more consistent basis, like the Department of Energy's annual transmission reviews, to identify areas in need of improvement to withstand extreme weather. Reviewing the map more than twice a year to draw conclusions is likely not feasible because the maps will only be updated twice a year per the statute,

125. See OFF. OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY, U.S. DEP'T OF ENERGY, *supra* note 7, at 2 (stating that the Department of Energy "identified, in consultation with industry stakeholders, specific information in regional sources that was appropriate to include").

126. See 16 U.S.C. § 824p(a).

127. See Broadband Deployment Accuracy and Technological Availability Act, 47 U.S.C. § 644(b)(1) (2020) (requiring a process through which stakeholders can submit "specific information about the deployment and availability of broadband Internet access service in the United States on an ongoing basis").

128. *Information for Filers*, FED. COMM'NS COMM'N, <https://www.fcc.gov/BroadbandData/filers> [https://perma.cc/CK6W-7TBF] (last visited Nov. 11, 2023) (notifying filers that "data as of June 30th is due no later than the following September 1st, and data as of December 31st is due no later than the following March 1st").

but the FCC could develop mechanisms to invite comments on annual reviews of the data received from stakeholders. It is possible that if annual transmission reviews of the entire network require too much effort, reviews of focused areas, like around coastlines, may work best.

Given the evolving trends of technology in this area, the agency should continue to work with providers to create long-term plans for continual data transfer and analysis both ways. The continual transfer of this knowledge will also provide for better analysis from the FCC on long-term network instability trends. The Broadband DATA Act mandates the FCC “develop a process through which entities . . . may submit specific information about the deployment and availability of broadband Internet access service in the United States.”¹²⁹ The Broadband DATA Act creates a mandate for a biannual update of the broadband maps at minimum, but FCC updates of the maps themselves may not lead to broader solutions since stakeholders will only have an awareness of the changes in their own data.¹³⁰ The Department of Energy’s annual transmission reviews are helpful in this light; stakeholders can review the data and make their own long-term business decisions. Flows of data in both directions will help inform Congress of developments and raise awareness for challenges from extreme weather in the communications industry.

The FCC should thus follow the example of the Department of Energy in making publicly available annual reviews of the communications infrastructure data, which would help show stakeholders where construction or upgrade of infrastructure is needed. The data will be handed to the FCC on a biannual basis at minimum, so the FCC should aim to review the data as it is received from open submission windows. The FCC may push back on more regular reviews of the data since changing the map and conducting a data analysis could lead to high administrative costs. However, having these reviews publicly available for stakeholder review may prompt service providers to expand the durability and availability of service to customers. The FCC has the potential to continue the conversations it has started with data submission windows to drive forward-looking solutions in building up the grid in preparation for extreme weather across the country.

IV. CONCLUSION

The FCC should modify its current framework of retroactive response to network instability and embrace a framework of proactively working with stakeholders to solidify the resilience of our communications network in light of future extreme weather. The Department of Energy’s mandated review of the electric grid provides inspiration for the FCC to continually review vulnerable areas of the communications network and provide proactive funding to needed areas. Further, it provides a framework for evaluating the communications network infrastructure of the United States on a habitual

129. *Id.*

130. *See* 47 U.S.C. § 642(c)(3).

timeline, which will encourage the participation of many stakeholders in the process.

The FCC has the capabilities to gather communications network data, evolve existing communication lines with state stakeholders on proactively creating solutions, and set aside funding for areas of the United States that will be disproportionately affected by extreme weather. The FCC's framework with the Puerto Rico Together (Uniendo a Puerto Rico) Fund and Connect USVI Fund sets a standard for recognizing and responding to critical needs for infrastructure upgrades in vulnerable areas of the United States. The FCC can use the Broadband DATA Act as a springboard for not only ensuring that wireless communications are available across the country but also strengthening a network infrastructure that will withstand damage from extreme weather.

Now, imagine how differently the earlier disaster scenario would end up if the FCC had planned for a devastating storm's impact on communication lines to local authorities. The FCC likely would have noticed the repeated outages from storms in the area and upgraded the strength of wireless towers in the affected area. A call to local authorities to inform them of your emergency situation would bring help to your home in a matter of minutes instead of waiting hours or days.

