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SUPPLEMENTARY INFORMATION: On September 8, 2021, the EPA published an advance notice of proposed rulemaking (ANPRM) soliciting information and requesting comments to assist in the potential development of regulations for pyrolysis and gasification units that are used to convert solid or semi-solid feedstocks to useful products such as energy, fuels, and chemical commodities (86 FR 50296). In accordance with that Notice, the comment period to respond to the ANPRM currently closes on November 8, 2021. The EPA has received a request to extend the comment period. After considering the request to extend the public comment period, the EPA has decided to extend the public comment period until December 23, 2021. This extension will provide the additional time requested by the public to review the request and gather information to respond.

Penny Lassiter,

Director, Sector Policy and Programs Division.

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FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 4

[PS Docket Nos. 21-346, 15-80; ET Docket No. 04-35; FCC 21-99; FR ID 55366]

Resilient Networks; Disruptions to Communications; Disruptions to Communications

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: In this document, the Commission seeks comment on: potential improvements to the voluntary Wireless Network Resiliency Cooperative Framework (Framework), including evaluating what triggers its activation, its scope of participants, whether existing Framework elements can be strengthened, any gaps that need to be addressed, and whether the public would benefit from codifying some or all of the Framework; ways to enhance the information available to the Commission through the Network Outage Reporting System (NORS) and Disaster Information Reporting System (DIRS) during disasters and network outages to improve situational

awareness; and communications resiliency strategies for power outages, including improved coordination between communications service providers and power companies and deploying onsite backup power or other alternative measures to reduce the frequency, duration, or severity of power-related disruptions to communications services.

DATES: Submit comments on or before December 6, 2021, and reply comments on or before January 4, 2022.

ADDRESSES: You may submit comments, identified by PS Docket Nos. 21-346 and 15-80; ET Docket No. 04-35, by any of the following methods:

- *Electronic Filers:* Comments may be filed electronically using the internet by accessing the ECFS: <http://apps.fcc.gov/ecfs/>.

- *Paper Filers:* Parties who choose to file by paper must file an original and one copy of each filing.

Filings can be sent by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.

- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 45 L Street NE, Washington, DC 20554.

- Effective March 19, 2020, and until further notice, the Commission no longer accepts any hand or messenger delivered filings. This is a temporary measure taken to help protect the health and safety of individuals, and to mitigate the transmission of COVID-19. See FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Policy, Public Notice, DA 20-304 (March 19, 2020). <https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy>.

People with disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an email to fcc504@fcc.gov or calling the Consumer and Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

FOR FURTHER INFORMATION CONTACT: For further information, contact Saswat Misra, Attorney-Advisor, Cybersecurity and Communications Reliability Division, Public Safety and Homeland

Security Bureau, (202) 418-0944 or via email at Saswat.Misra@fcc.gov.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Notice of Proposed Rulemaking (NPRM), in PS Docket Nos. 21-346 and 15-80; ET Docket No. 04-35; FCC 21-99, adopted on September 30, 2021 and released on October 1, 2021. The full text of this document is available by downloading the text from the Commission's website at: <https://docs.fcc.gov/public/attachments/FCC-21-99A1.pdf>. When the FCC Headquarters reopens to the public, the full text of this document will also be available for public inspection and copying during regular business hours in the FCC Reference Center, 45 L Street NE, Washington, DC 20554.

Synopsis

I. Introduction

1. With this Notice of Proposed Rulemaking (NPRM), we propose steps to improve the reliability and resiliency of communications networks during emergencies. We address these matters against the backdrop of Hurricane Ida, which hit the United States as a Category 4 hurricane and caused significant flooding and damage in several states along the Gulf Coast and the northeastern corridor of the United States. Hurricane Ida demonstrated that, while service providers' ability to restore communications in the aftermath of a devastating storm has improved, more can be done to help ensure that communications networks are sufficiently survivable to provide some continuity of service during major emergencies and to enhance the ability of service providers to restore communications when they fail.

2. Specifically, we consolidate several lines of prior inquiry to initiate this rulemaking regarding the reliability, resiliency, and continuity of communications networks. Hurricane Ida is only the most recent disaster that resulted in failures precisely when Americans most need to communicate. Recent hurricane and wildfire seasons, earthquakes in Puerto Rico, and severe winter storms in Texas demonstrate that America's communications infrastructure remains susceptible to disruption during disasters. These disruptions can prevent or delay the transmission of 911 calls, first responder communications, Emergency Alert System (EAS) and Wireless Emergency Alert (WEA) messages, and other potentially life-saving information. They also can have cascading detrimental effects on the economy and other critical infrastructures due to

interdependencies among sectors, including the transportation, medical, and financial sectors. These disruptions may involve many or all communications networks—including wireline, wireless, cable, satellite, or broadcast facilities.

3. Accordingly, in this NPRM, we seek comment on measures to help ensure that communications services remain operational when disasters strike. We consider whether elements of the Wireless Network Resiliency Cooperative Framework (Framework)—a voluntary agreement developed by the wireless industry in 2016 to provide mutual aid in the event of a disaster—could be improved to enhance the reliability of communication networks. 31 FCC Rcd 13745 (2016) (*Framework Order*). We also ask whether the public would benefit from codifying some or all of the Framework into our rules. Next, we seek comment on how the Commission can better promote situational awareness during disasters through its Disaster Information Reporting System (DIRS) and Network Outage Reporting System (NORS). Finally, we explore communications resilience strategies to address one of the primary reasons for service disruptions: Electric power outages.

II. Background

4. Resilient communications networks are critical to economic growth, national security, emergency response, and nearly every facet of modern life. The Commission has long been concerned with enhancing the reliability and resiliency of the Nation's communications infrastructure. In 2004, the Commission adopted rules that require certain communications providers to supply the Commission with outage reports to address “the critical need for rapid, complete, and accurate information on service disruptions that could affect homeland security, public health or safety, and the economic well-being of our Nation, especially in view of the increasing importance of non-wireline communications in the Nation's communications networks and critical infrastructure.” 69 FR 68859 (Nov. 26, 2004) (*2004 Part 4 Report and Order*). Under these rules, service providers must submit outage reports to the Commission through NORS for outages that exceed specified duration and magnitude thresholds. 47 CFR 4.9. The Commission analyzes NORS outage reports to, in the short term, assess the magnitude of major outages, and in the long-term, identify network reliability trends and determine whether the outages likely could have been

prevented or mitigated had the service providers followed certain network reliability best practices.

5. In 2007, in the wake of Hurricane Katrina, the Commission established DIRS as a web-based means for service providers, including wireless, wireline, broadcast, and cable providers, to voluntarily report to the Commission their communications infrastructure status, restoration information, and situational awareness information specifically during times of crisis. The Commission recently required a subset of service providers that receive Stage 2 funding from the Uniendo a Puerto Rico Fund or the Connect USVI Fund to report in DIRS when it is activated in their respective territories. 34 FCC Rcd 9109, 9174, 9176–77, paras. 133, 138–140 (2019) (*Puerto Rico & USVI USF Fund Report and Order*). The Commission typically activates DIRS for affected counties in the event of major emergencies. These announcements often note that the Commission is suspending its rules on network outage reporting for DIRS participants during the activation period.

6. DIRS data have provided critical situational awareness during communications outages, even when information is shared only on an aggregated or limited basis. The Commission's analysis informs restoration efforts by federal partners and the agency's own assessments of communications reliability during disasters. For example, the Commission prepares and provides aggregated DIRS information, without company-identifying information, to the Department of Homeland Security (DHS), which then distributes the information to a DHS-led group of federal agencies tasked with coordinating disaster response efforts, including other units in DHS, during incidents. This DHS-led group is the Emergency Support Function #2 (ESF–2), which is composed of other participants including the Department of Agriculture, Department of Commerce, Department of Defense, General Services Administration, Department of Interior, and the Federal Communications Commission. Agencies use the analyses for their situational awareness and for determining restoration priorities for communications services and infrastructure in affected areas. The Commission also provides aggregated data, without company-identifying information, to the public during disasters. Recently, the Commission established a framework to provide additional federal, state, Tribal, and territorial partners with access to the

critical NORS and DIRS information they need to ensure the public's safety while preserving the presumptive confidentiality of the information.

7. Also following Hurricane Katrina in 2007, the Commission adopted backup power obligations in limited contexts. In 2007, the Commission adopted a rule requiring Commercial Mobile Radio Service (CMRS) providers and local exchange carriers to maintain emergency backup power for a minimum of 24 hours for assets inside central offices and eight hours for cell sites, remote switches, and digital loop carrier system remote terminals. After observing the severe impact on 911 networks across the Midwest caused by the 2012 derecho storm, the Commission took steps to promote 911 network reliability and resiliency by requiring covered 911 service providers to take reasonable measures to provide reliable 911 service, including through providing for central office backup power. 47 CFR 9.19(a)(4) (defining a “covered 911 service provider” as an entity that provides 911, E911, or [Next Generation 911 (NG911)] capabilities such as call routing, automatic location information (ALI), automatic number identification (ANI), or the functional equivalent of those capabilities, directly to a [Public Safety Answering Point (PSAP)], statewide default answering point, or appropriate local emergency authority, or an entity that operates one or more central offices that directly serve a PSAP). Covered 911 service providers must annually certify to the Commission that they have taken “reasonable measures to provide reliable 911 service with respect to 911 circuit diversity, availability of central office backup power, and diverse network monitoring,” or they must certify to taking alternative measures that “are reasonably sufficient to mitigate the risk of failure or that one or more certification elements are not applicable to its network.” 47 CFR 9.19(b). Covered 911 service providers must certify their compliance with backup power standards of 24 hours for central offices that provide administrative lines for Public Safety Answering Points (PSAPs) and 72 hours for central offices that have a selective router that directs 911 calls. 47 CFR 9.19. Further, the Commission has adopted rules requiring that providers of facilities-based, fixed voice service offered as a residential service provide their subscribers the options to purchase, at the point of sale, solutions that provide 8 and 24 hours of backup power for the service. 47 CFR 9.20.

8. In 2013, in the wake of Superstorm Sandy, the Commission again took up

the issue of communications infrastructure resiliency, particularly that of wireless resiliency; specifically, the Commission proposed to require facilities-based Commercial Mobile Radio Service providers to submit to the Commission for public disclosure, on a daily basis during and immediately after major disasters, the percentage of cell sites within their networks that are providing service. On December 14, 2016, in lieu of adopting this proposal, the Commission adopted an Order supporting the voluntary Framework, intended to promote resilient communications and situational awareness during disasters. Framework Order, 31 FCC Rcd at 13745–46, paras. 1–2. The Framework commits its participants to five prongs: providing for reasonable roaming arrangements during disasters when technically feasible; fostering mutual aid during emergencies; enhancing municipal preparedness and restoration; increasing consumer readiness and preparation; and improving public awareness and stakeholder communications on service and restoration status. An emergency or disaster activates the Framework where the Federal Emergency Management Agency (FEMA) activates ESF–2 and the Commission activates DIRS. ESFs provide the structure for coordinating Federal interagency support for a Federal response to an incident. ESF–2 coordinates Federal actions to assist industry in restoring the public communications infrastructure and to assist State, tribal, and local governments with emergency communications and restoration of public safety communications systems and first responder networks.

9. In 2017, the Government Accountability Office (GAO), in conjunction with its review of federal efforts to improve the resiliency of wireless networks during natural disasters and other physical incidents, released a report recommending that the Commission should improve its monitoring of industry efforts to strengthen wireless network resiliency. The GAO found that the number of wireless outages attributed to a physical incident—a natural disaster, accident, or other manmade event, such as vandalism—increased from 189 in 2009 to 1,079 in 2016. The GAO concluded that more robust measures and a better plan to monitor the Framework would help the FCC collect information on the Framework and evaluate its effectiveness, and that such steps could help the FCC decide if further action is needed. In light of prolonged outages during several emergency events in

2017 and 2018, and in parallel with the GAO recommendations, the Public Safety and Homeland Security Bureau (Bureau) conducted several inquiries and investigations to better understand and track the output and effectiveness of the Framework and other voluntary coordination efforts that promote wireless network resiliency and situational awareness during and after these hurricanes and other emergencies. In February 2020, following a series of PSHSB staff coordination meetings with wireless, backhaul and electric service providers to discuss the gaps identified in the above record, CTIA and the Edison Electric Institute formed the Cross-Sector Resiliency Forum on February 27, 2020 and released a 12-step action plan to improving wireless resiliency.

10. In the days leading up to landfall of Hurricane Ida on August 29, 2021, the FCC had begun coordinating response activities with the State of Louisiana, the Federal Emergency Management Agency, the Cybersecurity and Infrastructure Security Agency, and members of the Communications Information Sharing and Analysis Center (Comm-ISAC) and to determine potential impacts, challenges, and mutual aid resources. The Commission had already deployed agents to support the Louisiana Emergency Operations Center (EOC) and to conduct baseline surveys of communications as well as to provide coordination and spectrum management support. Communications companies had also begun pre-positioning mobile communications assets in safe zones just outside the potential impact areas in order to rapidly deploy much-needed services, post landfall. Ida had significant physical impacts on both power and communications infrastructure, which had cascading consequences on interdependent public safety communications infrastructure and services such as PSAPs and Louisiana's land mobile radio public safety communications network.

11. Following Hurricane Ida's departure, the Commission began supporting recovery work in earnest. The Commission reminded communications industry of its commitments in the Framework and encouraged wireless providers, specifically, to activate roaming in areas where cellular communications were hardest hit. Even after roaming had been activated in limited areas, communications remained diminished as communications companies were working to repair, replace, and restore communications infrastructure. Immediately after the storm, 28.1

percent of cell sites were down across the affected counties. Louisiana was hardest hit in this respect, with more than 50 percent of sites down in the affected counties on August 30. At its peak, Louisiana had three PSAPs offline due to damaged power and communications infrastructure, and other PSAPs were impacted and rerouted calls as generators began to fail. Commission personnel communicated with the Louisiana Association of Broadcasters to determine unmet fuel, communications, and power needs of state broadcasters and to facilitate the provision of much needed resources and services.

12. Commission staff also conducted on-the-ground assessments of communications infrastructure to provide emergency management officials intelligence and to assist with the identification of critical communications infrastructure, including responding to additional unintentional damage occurring during repairs to the communications and power infrastructure. The Commission also issued special temporary authorizations (STAs) and, *sua sponte*, numerous orders to provide regulatory relief in support of providers' restoration efforts, including waivers of deadlines and technical requirements, as well as providing relief to impacted consumers. This work remains ongoing as recovery continues.

III. Notice of Proposed Rulemaking

A. Improving the Wireless Network Resiliency Cooperative Framework

13. The voluntary Framework plays a central role in how wireless providers prepare for and respond to emergencies. Over the years, the Commission has examined and re-examined the efficacy of the Framework for purposes of restoring communications during and following disasters. These inquiries suggest that providers take a multifaceted approach to disaster readiness and response, with the aim of improving the public's safety during natural disasters. Wireless provider efforts have included investments in network resiliency, reinforcing network coverage and capacity, conducting site-based preparatory work, and making plans to mitigate commercial power failures, as well as utilizing commercial roaming agreements, working with government partners, and educating consumers on preparedness. These initiatives have helped to keep more Americans connected and informed even during major disasters.

14. However, these inquiries also show that there are both gaps in the

Framework's coverage and, during some recent disasters, delays in its implementation, including technical challenges associated with roaming implementation among signatory companies. Further, as explained below, there are some disaster situations where the Framework, by its own terms, would not go into effect. These findings from our prior inquiries suggest there may be targeted opportunities to improve the voluntary Framework and network resiliency—not just of wireless networks, but of communications networks as a whole. We seek comment on those opportunities below. We also seek comment on whether the Commission should revisit the voluntary nature of the Framework.

15. *Framework Activation.* Currently, the Framework only applies when both ESF-2 and DIRS are activated. As a result, there may be circumstances where the Framework is not activated but where mutual aid or other support obligations are warranted. For example, the Framework has not been operational during the California power shutoffs and wildfires because ESF-2 was not activated. To address this gap, should we work with carriers to revisit the prerequisites, e.g., the types of emergencies or other declarations (ESF-2 and DIRS activation) that trigger the Framework or that govern the duration of its obligations? If so, what should those triggers and durations be?

16. *Scope of Framework Participants.* We seek comment on whether expanding the scope of the Framework participants could enhance its effectiveness. Currently, signatories to the Framework include only AT&T Mobility, CTIA, GCI, Southern Linc, T-Mobile, U.S. Cellular, and Verizon Wireless. Additionally, the Competitive Carriers Association filed a letter supporting the Framework. As the list of signatories demonstrates, there are a number of wireless providers who are not signatories to the Framework. Further, the Framework signatories only include wireless providers. Would greater participation in the Framework enhance its effectiveness? Are there steps the Commission can take to encourage voluntary participation beyond the scope of the existing signatories, such as to include smaller wireless providers, or entities beyond the mobile-wireless industry, such as facilities-based backhaul providers, covered 911 service providers, cable, wireline, broadcast, satellite, or interconnected VoIP providers? Should the Framework or portions of the Framework be expanded to include any other stakeholders or organizations?

17. *Improving Wireless Roaming.* The Framework commits its signatories to provide reasonable roaming in situations where: “(i) A requesting carrier’s network has become inoperable and the requesting carrier has taken all appropriate steps to attempt to restore its own network, and (ii) the home carrier has determined that roaming is technically feasible and will not adversely affect service to the home carrier’s own subscribers,” with such roaming arrangements “limited in duration and contingent on the requesting carrier taking all possible steps to restore service on its own network as quickly as possible.” *Framework Order*, 31 FCC at 13752–53, para 19.

18. Recent events suggest that roaming during disaster contexts can be improved. As the *Hurricane Michael Report* found, “at least some wireless providers did not take advantage of the types of disaster-related roaming agreements envisioned in the Framework, allowing their customers to remain in the dark rather than roam on a competitor’s network.” FCC, Public Safety and Homeland Security Bureau, October 2018 Hurricane Michael’s Impact on Communications: Preparation, Effect, and Recovery, PS Docket No. 18–339, Report and Recommendations at 6 (PSSHB 2019), <https://docs.fcc.gov/public/attachments/DOC-357387A1.pdf> (*Hurricane Michael Report*). During Hurricane Ida, there was limited transparency, and therefore understanding, regarding the status of roaming, including where it was available and where it was not, and which network technologies were utilized. We seek comment on how best to address these issues through the voluntary Framework. Are the current Framework pre-requisites to triggering disaster roaming too restrictive, to the detriment of consumers? In particular, we seek comment on improvements to the Framework to ensure roaming is operational prior to an event and seamless during emergencies—addressing both resiliency and restoration—such as annual testing of roaming capabilities and coordination processes. Are there other improvements that can be made to ensure that roaming is made available in a timely manner and for the benefit of the maximum population possible? For example, should there be minimum timeframes by which a provider must respond to a disaster roaming request? Are there conditions or other criteria that could be incorporated into the Framework to determine that, once met,

roaming should be available automatically in qualifying disaster areas? If a roaming request is deemed technically infeasible, how should that determination be conveyed? What criteria should be used to determine whether roaming is technically feasible? Have there been instances where roaming requests have been unreasonably denied or responses to such requests have been unreasonably delayed, or where the roaming-related provisions of the Framework did not work as intended? During Hurricane Ida, we understand that initial requests for roaming under the Framework focused on access to 3G networks. Are there benefits to encouraging roaming access to newer generations of network technology and, if so, how can the Commission best support such arrangements? To what extent do capacity challenges or network configuration issues also hinder effective roaming, and how should any improvements to the Framework account for this concern? Should there be any improvement in the standards or their implementations to ensure the emergency roaming is automatically and seamlessly accessible to user devices without requiring any action from the user? Can providers’ readiness to execute such disaster-triggered roaming be verified and tested? What are the public safety benefits and costs associated with these improvements in wireless roaming?

19. *Fostering Mutual Aid.* The Framework commits its signatories to foster mutual aid during disasters. Nevertheless, we observed prolonged outages during Hurricane Ida. We seek comment on how signatories fostered mutual aid, such as through sharing physical assets, during Hurricane Ida and other recent disasters, and how effective this mutual aid has been in ensuring continuity of communications. Are there instances in which reasonable requests for mutual aid were denied by wireless providers? Should the Framework do more to strengthen the effectiveness of mutual aid? What benefits would accrue if other segments of the communications industry—such as cable, wireline, and broadcast—agreed to foster mutual aid during disasters?

20. *Enhancing Municipal Preparedness and Restoration.* Framework signatories convened with local government representatives’ public safety subject matter experts and developed best practices to facilitate coordination before, during, and after emergencies and disasters in order to maintain and restore wireless service continuity. Were these best practices

utilized in Hurricane Ida and other disasters, and how effective were these best practices in real-world conditions? Should they be updated in light of lessons learned from these disasters? Are there additional actions that wireless providers and other stakeholders (e.g., backhaul service, wireline service providers) can take to ensure appropriate and effective coordination with local agencies to mitigate the impact of service disruptions? What are the respective costs and benefits? For example, should providers establish processes for sharing real-time restoration efforts? Should the Framework include coordination obligations and particular coordination activities or best practices? Are there other steps that the Commission can take to improve coordination? The Commission also seeks comment on the recommendations of the Broadband Deployment Advisory Committee's Disaster Response and Recovery Working Group pertaining to coordination with local governments and building and maintaining formal relationships across industry and government stakeholders, and coordination and information sharing between stakeholders during the disaster planning and recovery phases.

21. *Increasing Local Preparedness and Consumer Readiness.* The Framework commits signatories to increase consumer readiness and preparation through the development and dissemination with consumer groups of a Consumer Readiness Checklist. Is there evidence that the public is aware of this checklist? How is it promoted? Are there other steps that wireless providers should take to foster local preparedness and consumer readiness in the face of natural disasters, such as public service announcements? What are the benefits and costs associated with those steps? Should the Commission explore additional consumer awareness and preparedness activities?

22. What measures are in place to ensure that information is accessible to all Americans? Consumer groups note that the deaf and hard-of-hearing communities often rely on multiple forms of communications before and during emergencies, and recommend that signatories work with these communities to ensure information is accessible. Should the Framework require signatories to conduct outreach through multiple forms of communication, such as public service announcements on television, radio, and social media that is accessible to both hard-of-hearing and non-English speaking communities? Verizon

suggests providers can maintain a dedicated website for a specific disaster event. Should the Framework require signatories to meet with groups representing persons with disabilities to provide information on emergency planning and resources? Are there other steps the Commission should take to improve communications with these and other communities?

23. *Improving Public Awareness.* Finally, the Framework commits signatories to improve public awareness and stakeholder communications on service and restoration status, through sharing DIRS data on cell site outages on an aggregated, county-by-county basis in the relevant geographic area. Since the Framework was released, signatories have agreed to share additional data with the public, including more granular data on the cause of cell site outages and the number of in-service cell sites operating on backup power. The Commission has also requested comment on whether other outage data, e.g., whether the service disruption extends to 911 service, should be disclosed to the public. See Amendments to Part 4 of the Commission's Rules Concerning Disruptions to Communications, et al., Third Notice of Proposed Rulemaking, FCC 21-45, 2021 WL 1603461, at *13-16, paras. 36-46 (Apr. 22, 2021). Would public disclosure of additional information regarding service disruptions promote public safety? If so, what additional information should be disclosed? What are the benefits and costs associated with releasing this information directly to the public? What mechanisms are in place in communities to impart awareness about recovery planning and long term-term resiliency, and are those mechanisms accessible to persons with disabilities? How might those mechanisms differ across communities or geographic areas, and how can those differences be accommodated by Framework signatories?

24. *Scope of Framework Obligations.* We seek comment on the scope of the Framework's obligations. Should we expand the scope of what is expected in the event of a disaster? What additional or revised measures are warranted to address gaps in promoting resiliency and what are their costs and benefits? For example, should the voluntary Framework include provisions regarding the placement of back-up systems, such as Cells on Light Trucks, so that they are ready to deploy for vulnerable infrastructure to improve service restoration time? Should the Framework include requirements for restoration or prioritization of text-to-

911 capability in areas where the PSAP is text-capable, as text-to-911 can be an important communications solution in emergencies, particularly for individuals with disabilities? Should the Framework include provisions that address backhaul redundancy and resiliency? For example, could the Framework address a limit on the number of cell sites operating on a single backhaul fiber link? What other steps would promote backhaul resiliency during disasters?

25. *Framework-Related Reporting.* We seek comment on whether we should require wireless providers to submit reports to the Commission detailing implementation of the voluntary Framework in real time or in the aftermath of a disaster. What are the benefits and costs associated with such a reporting requirement? We seek comment on what information these reports should include, such as specific information related to the way the provider adhered to any roaming, mutual aid, consumer outreach, or related provisions of the Framework suggested above. For example, should the Commission be notified when roaming has been activated or refused, including information on which generational technologies it has been activated, and as to which providers are roaming on which networks? Should the Commission be notified when resources or services are shared through mutual aid? How soon after wireless provider action should such notifications be made and how should they be made?

26. *Codifying the Framework.* In response to our prior inquiries, some commenters have urged the Commission to reexamine the voluntary nature of the Framework. Some of these commenters highlight the Commission's *Hurricane Michael Report* to suggest that existing voluntary coordination efforts, including the Framework, may not be sufficient to promote wireless network resiliency and situational awareness during and immediately after emergencies. Accordingly, we seek comment on whether some or all of the existing or a modified Framework should be mandatory, and for whom. What are the costs and benefits of doing so? We also seek comment on our legal authority to mandate disaster-based obligations in line with the existing or an expanded Framework. Would the aggregate of these solutions address the failures highlighted by the *Hurricane Michael Report* or should additional measures be considered? Finally, we seek comment on how the Commission should enforce any mandatory obligations that are not met.

B. Promoting Situational Awareness During Disasters

27. Over the years, our experience has shown that DIRS and NORS are vital public safety tools that equip the Commission and its federal and local partners with actionable situational awareness information for identifying and resolving threats to 911 and other emergency service communications. DIRS focuses on infrastructure status information rather than service outage information, as in NORS. NORS thus draws a distinction between service outages that affect just 911 and other types of service outages. Currently, there is limited visibility on how disasters impact 911 service specifically. Requiring DIRS reporting in the event of disaster-related outages would help to close this information gap. *Amendments to Part 4 of the Commission's Rules Concerning Disruptions to Communications*, PS Docket No. 15–80, Second Report and Order, 36 FCC Rcd 6136, 6139, paras. 8, 9 (2021). DIRS broadly collects infrastructure status information about the nation's communications networks, but participation is voluntary for the nation's service providers. While DIRS is voluntary, the Commission recently required a subset of service providers that choose to accept Stage 2 funding from the Uniendo a Puerto Rico Fund or the Connect USVI Fund to report in DIRS when it is activated in their respective territories. *Puerto Rico & USVI USF Fund Report and Order*, 34 FCC Rcd at 9174, 9176–77, paras. 133, 138–140.

28. The Commission initially grounded its voluntary approach on observations that a voluntary paradigm worked well during Hurricane Katrina and that a mandatory reporting process would likely not be adaptable to unique aspects of each particular crisis. *Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, EB Docket No. 06–119 et al., Order, 22 FCC Rcd 10541, 10549, para. 22 (2007). Since that time, the Commission has observed that, while the nation's large providers typically elect to voluntarily report in DIRS, smaller providers often do not. This not only reduces the total number of DIRS filings available to inform the Commission's analysis of network reliability, but also reduces the Commission's situational awareness, including awareness of the state of 911 and other emergency services, in locations served by smaller providers, which are often vulnerable rural or other hard to access areas. This also

creates ambiguity about whether a provider's lack of DIRS filings means that its network infrastructure actually remains undamaged, it is choosing not to voluntarily participate in DIRS, or it is unable to file, e.g., because it cannot access DIRS due to disruption of its internet access.

29. Meanwhile, NORS participation is mandatory, but it is centered on disruptions to voice telephony. Under our rules, certain service providers—wireline, cable, satellite, wireless, interconnected VoIP, and Signaling System 7 providers—must submit outage reports to NORS for voice and other outages that exceed specified duration and magnitude thresholds. 47 CFR 4.9. Service providers are required to submit a preliminary notification within two hours after determining that an outage is reportable, followed by an initial outage report within three calendar days, and a final report no later than 30 days after discovering the outage. 47 CFR 4.9. These reports are intended to address “the critical need for rapid, complete, and accurate information on service disruptions that could affect homeland security, public health or safety, and the economic well-being of our Nation” *2004 Part 4 Report and Order*, 19 FCC Rcd at 16833, para. 1. The Bureau analyzes NORS data to assess the magnitude of major outages, identify trends, and promote network reliability. However, these outage reporting requirements do not collect information about disruptions specifically to broadband service. This means the Commission has limited situational awareness about outages involving broadband service.

30. We seek comment on steps the Commission can take to address these issues and encourage better situational awareness through DIRS and NORS. Starting with DIRS, are there steps the Commission can take to encourage broader voluntary participation during disasters, including from smaller providers? Alternatively, should the Commission consider requiring the nation's service providers, i.e., cable providers, Direct Broadcast Satellite providers, Satellite Digital Audio Radio Service, TV and radio broadcasters, Commercial Mobile Radio Service and other wireless service providers, wireline providers, and VoIP providers, to report their infrastructure status information in DIRS when the Commission activates DIRS in geographic areas in which they broadcast or otherwise provide service? We recognize that a proposed requirement to file in DIRS must be balanced against additional burdens on service providers, particularly as DIRS

reports are filed in the midst of disasters and other emergencies. If we were to explore requiring DIRS filing, we seek comment on our legal authority to do so, the costs and benefits associated with mandatory reporting, and how the Commission should enforce any failure to file DIRS information.

31. With respect to NORS, we seek comment on the public interest benefits and the costs of reporting of broadband service outages. Would such reporting likewise improve emergency managers' situational awareness during disasters? Or do public safety officials and others currently have access to broadband service outage data through other means? Could this data be leveraged to help identify broadband outage trends, and if so, how could this knowledge support first response and network reliability efforts?

32. We seek comment on suspension of NORS reporting requirements during disasters. Under our current voluntary DIRS reporting approach, the Bureau suspends NORS reporting obligations, via public notice, for providers who elect to report in DIRS for the duration of its activation period. Formally codifying this practice in our rules may give providers more clarity on their obligations and streamline and formalize existing practices. We therefore seek comment on whether to codify in our part 4 rules the Commission's typical practice of granting to providers a waiver of their NORS reporting requirements when they report the outage in DIRS. Are there needs of public safety officials or others that are not being met by the current reporting practices? If so, will such gaps remain when our NORS and DIRS information sharing rules become effective? *Amendments to Part 4 of the Commission's Rules Concerning Disruptions to Communications*, PS Docket No. 15–80, Second Report and Order, 36 FCC Rcd 6136 (2021).

33. We note that there may be instances in which DIRS is deactivated but some providers have not yet fully restored service, resulting in limited continuing outages. In these instances, the Commission no longer has situational awareness as to the status of those providers' services, because updates are no longer being filed in DIRS and the outage was never filed in NORS. We seek comment on how to best address this gap and ensure that the Commission maintains situational awareness of outages. Should providers with ongoing outages at the time of DIRS deactivation be required to report those outages in NORS?

34. In light of the concerns noted above, we also seek comment on steps

the Commission can take to increase its situational awareness of the state of 911 and other emergency services.

C. Addressing Power Outages

35. The recent devastation wrought by Hurricane Ida, which left hundreds of thousands of Louisianans without power, water, and other basic utilities, also extended to the region's communications infrastructure. Data compiled by the Commission shows that approximately half of all cellular sites in New Orleans and the surrounding disaster area remained out of service nearly two days after the worst effects of Ida had passed, with no clear timetable for the restoration of these networks. NORS and DIRS data collected by the Commission in the aftermath of Hurricane Ida and other recent disaster events reveal that a lack of commercial power at key equipment and facilities is the single biggest reason why communications networks transmitting 911 service and related emergency information fail in the aftermath of disaster events. For example, the Commission's DIRS data show that the majority of cell site outages in the immediate aftermath of

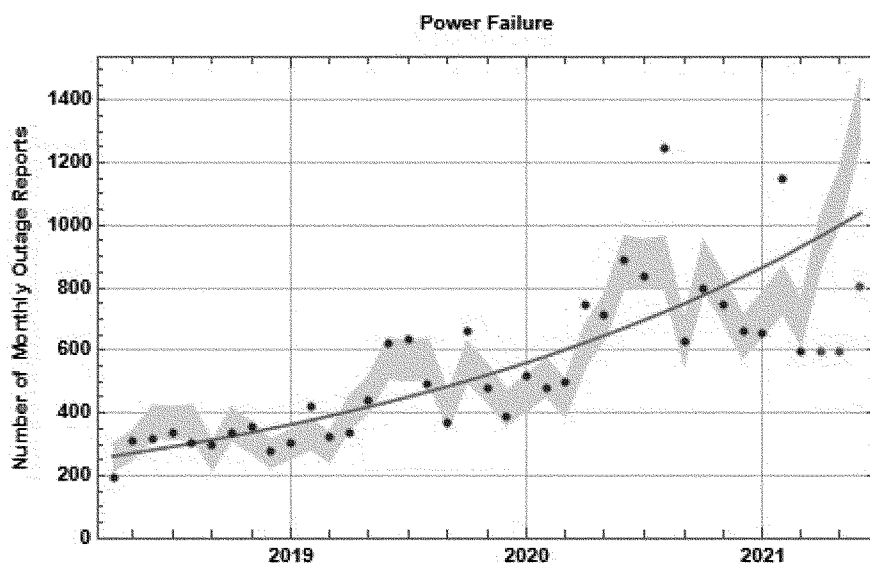
Hurricane Ida's central disaster region were due to a lack of commercial power availability. Communications Status Report for Areas Impacted by Hurricane Ida at 5–6 (August 31, 2021), <https://docs.fcc.gov/public/attachments/DOC-375367A1.pdf>.

36. More generally, Commission analysis of DIRS data shows that over 50% of cell site outages that occurred during major 2020 earthquakes, hurricanes, and storms were due to power failures. The Commission's NORS outage data similarly reveal that the number of outages caused by power failures has been steadily increasing for the past several years and that power failures are currently driving a nationwide trend in the increase of outages. The Commission received 9,158 outage reports in 2020 alone for communications disruptions caused by power failures, potentially affecting 63,097,389 customers. Of those customers, 4.3 million potentially experienced service disruptions on a single day.

37. Without power to support providers' network operations in the aftermath of disasters, the public is unable to place potentially life-saving

911 calls, local emergency management officials are unable to transmit EAS and WEA messages, evacuation orders, and other public safety-related information, and first responders are unable to coordinate effectively to save lives and property. Conversely, with backup power in place, providers are able to bring their networks online and, if necessary, immediately begin diagnosing and addressing damage that their networks may have sustained.

38. Hurricane Ida thus continues an unfortunate (though potentially addressable) trend, demonstrating that the nation's communications infrastructure remains highly prone to failure due to disruptions to commercial power in the face of disasters. This reinforces observations that we have made during recent hurricane and wildfire seasons, earthquakes in Puerto Rico, and this year's severe winter storms in Texas. If the current trend continues without corrective action, the frequency of outages will worsen in coming years as the nation experiences disaster events of increasing severity, duration, and impact, including hurricanes, flooding, and wildfires.



NORS Data Trend in Outages Caused by Power Failure, April 2018 to June 2021

This figure depicts the number of monthly final outage reports in NORS with power failure as a reported cause over time. The red dots represent the numbers of outage reports in 2Q21 months and blue dots represent months prior to 2Q21. The green line shows the expected number of outages in each

month without taking seasonality effects into account; as such, it represents the general overall trend in the three-year window immediately preceding 2Q21 (April 2018 through March 2021). The shaded gray area indicates a 99% confidence interval for each month. This confidence interval is defined by

the expected number of outages in each month based on the trend and seasonality effects. These data do not include outages caused by power failures that were reported in DIRS. They also do not include outages that are not service affecting (e.g., outages of transport facilities with diverse routes)

or special facility outages (outages of single circuits with Telecommunications Service Priority Level 1 or 2).

39. In view of this context, we now seek to explore communications resilience strategies for power outages. As part of this review, we seek to identify actions the Commission, communications providers, and power companies can cooperatively take to encourage and increase coordination in the power and communications sectors before, during, and after an emergency or disaster. We also seek to better understand how changing circumstances since the Commission's last broad consideration of backup power (including trends showing increasingly severe storms, wildfires, and other disasters, and advances in power technology) may bear on whether and how backup power or alternative measures may help promote continuity of power, including for PSAPs and emergency services. We seek comment on this issue.

40. As an initial matter, we seek comment on communications service provider coordination with power companies before, during, and after disasters, including efforts of the Cross-Sector Resiliency Forum. Are existing coordination efforts effective at minimizing communications service outages that are caused by power outages? Are there coordination activities that communications service provider and power companies could potentially take that have not yet been formalized or operationalized? If so, what steps could the Commission take to encourage this coordination? For example, should the Commission convene stakeholders from the electric industry, telecommunications sector, and public safety agencies to take part in regional coordination events to encourage greater cross-sector coordination in preparing for and in response to disasters? Should the Commission coordinate with gubernatorial offices and state emergency management agencies to encourage integrating communications providers and power companies into response planning, execution, and exercises?

41. Next, we seek comment on how backup power or alternative measures may help promote the continuity of service during or after disasters. We seek comment on the current state of providers' backup power implementations. For example, how many hours of backup power do providers typically maintain, what technologies do they use to meet their requirements, and how readily

deployable are those technologies when needed? Does the amount or type of backup power solution differ depending upon the facility or type of infrastructure? What are the benefits and challenges of maintaining backup power on-site? If not maintained on-site, how could providers ensure that they can move backup power resources on-site with minimal delay when disaster strikes? What steps do providers take to adequately mitigate the risk that a disaster event that disrupts primary power would also knock out any on-site backup power resources (e.g., fuel generators)? What types of backup power solutions are available for the various elements of infrastructure that may require it?

42. We seek comment on what steps service providers would need to take with respect to backup power deployment to significantly reduce the number of communications disruptions caused by power outages. How many hours of on-site backup power would be appropriate at their facilities to significantly reduce the frequency of power-related service disruptions? Are there events or geographic areas in which more hours of backup power are needed than others? To maximize the effectiveness of backup power solutions, should backup power be provisioned at certain critical points in communications infrastructure, and if so, at which points? In general, how should the Commission define or otherwise identify facilities and equipment that are critical to ensuring that emergency communications can be transmitted in the aftermath of a disaster? Are there differences across different types of communications networks or geographies where they are located that are relevant to deployment of backup power solutions or performance during power outages more generally? Is the deployment of on-site backup power sufficient to keep networks online in view of other potentially independent factors that may cause a network to fail during a disaster, e.g., lack of hardened and resilient network equipment? If it is not sufficient, what other steps should service providers take to avoid service disruptions? What are the associated costs and benefits?

43. As we explore the potential for wider backup power implementation, we seek comment on service providers' experiences with any state-specific backup power requirements as well as the potential cost of implementation.

44. We also seek comment on any alternatives to on-site backup power that have also proven successful or have the potential to reduce the frequency,

duration, or severity of disruptions to communications services caused by power outages. Are there other technical solutions for preventing service disruptions caused by power outages or other efforts to reduce the number of service disruptions that we have not raised here?

45. We also seek comment on the Commission's existing requirements for covered 911 service providers to implement reasonable central-office backup power measures to ensure 911 reliability. 47 CFR 9.19(b). The Commission adopted these and other requirements for covered 911 service providers to promote 911 network resiliency. 47 CFR 9.19. As noted above, Louisiana had three PSAPs offline due to damaged power and communications infrastructure in the aftermath of Hurricane Ida. Other PSAPs were also impacted as generators began to fail. Are there steps the Commission can take, such as revisions to our resiliency rules (see, e.g., 47 CFR parts 4, 9) or encouraging of voluntary measures, to make it more likely that PSAPs will have the necessary resources to continue service during and after disasters? Are there other considerations pertaining to 911 outages and access to emergency services in the wake of a disaster?

46. *Digital Equity and Inclusion.* Finally, the Commission, as part of its continuing effort to advance digital equity for all, including people of color, persons with disabilities, persons who live in rural or Tribal areas, and others who are or have been historically underserved, marginalized, or adversely affected by persistent poverty or inequality, invites comment on any equity-related considerations and benefits (if any) that may be associated with the proposals and issues discussed herein. Specifically, we seek comment on how our proposals may promote or inhibit advances in diversity, equity, inclusion, and accessibility, as well the scope of the Commission's relevant legal authority.

IV. Procedural Matters

47. *Paperwork Reduction Act.* This document contains proposed new and modified information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the OMB to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4),

we seek specific comment on how we might further reduce the information collection burden for small business concerns with fewer than 25 employees.

48. *Ex Parte Rules—Permit-But-Disclose*. This proceeding shall be treated as “permit-but-disclose” proceedings in accordance with the Commission’s *ex parte* rules. 47 CFR 1.1200–1.1216. Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must: (1) List all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made; and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter’s written comments, memoranda, or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (*e.g.*, .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission’s *ex parte* rules.

49. *Regulatory Flexibility Act*. The Regulatory Flexibility Act of 1980, as amended (RFA), requires that a regulatory flexibility analysis be prepared for notice and comment rulemaking proceedings, unless the agency certifies that “the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.” 5 U.S.C. 605(b). Accordingly, the Commission has prepared an Initial Regulatory

Flexibility Analysis (IRFA) concerning potential rule and policy changes contained in this Notice of Proposed Rulemaking.

V. Legal Basis

50. Authority for the actions proposed in this Notice of Proposed Rulemaking may be found in sections 1, 4(i) through (j), 4(n) through (o), 201, 202, 214, 218, 251(e)(3), 254, 301, 303(b), 303(g), 303(r), 307, 309(a), 309(j), 316, 332 and 403, of the Communications Act of 1934, as amended, 47 U.S.C. 151, 154(i) through (j), 154(n) through (o), 201, 202, 214, 218, 251(e)(3), 254, 301, 303(b), 303(g), 303(r), 307, 309(a), 309(j), 316, 332, 403; sections 2, 3(b), and 6 and 7 of the Wireless Communications and Public Safety Act of 1999, 47 U.S.C. 615 note, 615, 615a–1, 615b, section 106 of the Twenty First Century Communications and Video Accessibility Act of 2010, 47 U.S.C. 615c, and section 506(a) of the Repack Airways Yielding Better Access for Users of Modern Services Act of 2018 (RAY BAUM’s Act).

VI. Initial Regulatory Flexibility Analysis

51. As required by the Regulatory Flexibility Act of 1980, as amended (RFA), the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in the Notice of Proposed Rulemaking in this proceeding. Written public comments are requested on this IRFA, including comments on any alternatives. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments as specified in the *NPRM*.

A. Need for, and Objectives of, the Proposed Rules

52. The *NPRM* proposes steps to safeguard and improve transmission of life-saving 911, Emergency Alert System (EAS), Wireless Emergency Alert (WEA) messages and other life-saving information during emergencies by improving the reliability, resiliency, and continuity of associated communications networks. More specifically, the Notice of Proposed Rulemaking:

- Considers whether elements of the Wireless Network Resiliency Cooperative Framework (Framework)—a voluntary agreement developed by the wireless industry in 2016 to provide mutual aid in the event of a disaster—could be improved to enhance the reliability of communication networks,

including by inquiring into whether the public would benefit from codifying some or all of the Framework into the Commission’s rules.

- Seeks comment on how the Commission can better promote situational awareness during disasters through its Disaster Information Reporting System (DIRS) and Network Outage Reporting System (NORS). (Henceforth, the term “nation’s service providers” will refer collectively to this group of entities.)

- Explores communications resilience strategies to address one of the primary reasons for service disruptions: Electric power outages, including through an exploration of backup power implementations.

53. These proposals are made against the backdrop of Hurricane Ida, which hit the United States as a Category 4 hurricane in August 2021 and caused significant flooding and damage in several states along the southern and northeastern corridors of the United States. Hurricane Ida, as well as recent hurricane and wildfire seasons, earthquakes in Puerto Rico, and severe winter storms in Texas demonstrate that America’s communications infrastructure remains susceptible to disruption during disasters. These disruptions can prevent the transmission of 911 calls, first responder communications, EAS and WEA messages, and other potentially life-saving information. They also can have cascading detrimental effects on the economy and other critical infrastructures due to interdependencies among sectors, including the transportation, medical, and financial sectors, among others. Importantly, these disruptions may involve any or all communications networks—including wireline, wireless, cable, satellite, or broadcast facilities.

B. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

54. The RFA directs agencies to provide a description of and, where feasible, and estimate of the number of small entities that may be affected by the proposed rules, if adopted. The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.” In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act. A small business concern is one that: (1) Is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria

established by the Small Business Administration (SBA). Below is a list of such entities.

- Interconnected VoIP services;
- Wireline Providers;
- Wireless Providers—Fixed and Mobile;
- Satellite Service Providers; and
- Cable Service Providers.

C. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

55. We expect the potential rules in the NPRM will impose new or additional reporting or recordkeeping and/or other compliance obligations on service providers in the following ways:

- *Wireless Resiliency Framework.*

Any providers that are required to participate in elements of the Framework who do not already do so, potentially including smaller wireless providers and entities beyond the mobile-wireless industry, such as facilities-based backhaul providers, covered 911 service providers, cable, wireline, broadcast, satellite, or interconnected VoIP providers would potentially need to keep records related to roaming agreements, mutual aid agreements, preparedness and restoration plans, improving consumer readiness and preparation and improving public awareness and stakeholder communications on service and restoration status. These providers would potentially have to submit reports to the Commission detailing

implementation of the Framework in real time or in the aftermath of a disaster.

- *NORS and DIRS.* Any providers subject to DIRS reporting and new requirements related to NORS reporting, potentially including cable providers, Direct Broadcast Satellite providers, Satellite Digital Audio Radio Service, TV and radio broadcasters, Commercial Mobile Radio Service and other wireless service providers, wireline providers, VoIP providers, and broadband service providers, would report their communications outage information in NORS when their outages exceed thresholds specified in the Commission's Part 4 rules and infrastructure status information in DIRS when the Commission activates DIRS in geographic areas in which they broadcast or otherwise provide service.

- *Backup Power.* To the extent that the Commission were to adopt backup power requirements, any Public Safety Answering Points (PSAPs) or providers subject to them, potentially including cable providers, Direct Broadcast Satellite providers, Satellite Digital Audio Radio Service, TV and radio broadcasters, Commercial Mobile Radio Service and other wireless service providers, wireline providers, and VoIP providers, could potentially be required to take steps to make their networks more resilient to power outages, as discussed in the NPRM.

56. The NPRM seeks comment on a number of aspects of these proposals,

including which providers should be subject to them, the public safety benefits and costs associated with a provider's implementation of the Framework, DIRS and NORS reporting, and backup power resiliency improvements. Given that these elements are currently unknown pending comment, the Commission is presently unable to quantify the costs of compliance with rules associated with these proposals, and whether small entities will need to hire professionals to comply. However, given that each proposal would make more reliable the transmission of 911 calls, first responder communications, EAS and WEA messages, and other potentially life-saving information, we tentatively conclude that the benefits exceed the costs of implementing any of these proposals. We seek comment on this tentative conclusion and urge commenters to provide detailed information in support of their comments.

D. Federal Rules That May Duplicate, Overlap, or Conflict With the Proposed Rules

57. None.

Federal Communications Commission.

Katura Jackson,

Federal Register Liaison Officer, Office of the Secretary.

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