Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
The Proposed Extension of Part 4 of the Commission's Rules Regarding Outage Reporting to Interconnected Voice Over Internet Protocol Service Providers and Broadband Internet Service Providers	)))))	PS Docket No. 11-82

NOTICE OF PROPOSED RULEMAKING

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By the Commission: Chairman Genachowski and Commissioners Copps and Clyburn issuing separate statements; Commissioner McDowell approving in part, concurring in part and issuing a statement; Commissioner Baker not participating.

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I. INTRODUCTION

1. In this *Notice of Proposed Rulemaking* (*NPRM*), we propose to extend the outage reporting requirements in Part 4 of our rules[1] to interconnected Voice over Internet Protocol (VoIP) service[2] providers and broadband Internet Service Providers (ISPs).[3] This action will help ensure that our current and future 9-1-1 systems are as reliable and resilient as possible and assist our Nation's preparedness for man-made or natural disasters, such as Hurricane Katrina. We seek comment on all aspects of this proposal to serve our role of protecting America's critical infrastructure, including the definitions and thresholds that would trigger the reporting requirement.

2. Broadband technologies delivering communications services to end users have changed behaviors and revolutionized expectations in many aspects of American life and are fast becoming substitutes for communications services provided by older, legacy communications technologies.[4] As of June 30, 2010, 28 percent of the more than 89 million residential telephone subscriptions were provided by interconnected VoIP providers[5]—an increase of 27 percent (from 19.9 million to 25.2 million) in the last year.[6] As part of the transformation that broadband services are making in the way American consumers, businesses, and governments operate, broadband networks now carry a substantial volume of 9-1-1 traffic.[7] They are also a significant form of communications in times of crisis. Communications outages to broadband facilities, whether the result of physical hardware or software failures, natural disasters, or man-made disasters including cyber attacks, threaten the public's ability to summon in emergency situations. The National Security and Emergency Preparedness posture of the United States depends on the availability of broadband communications during times of emergencies,[8] and it is one of

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[1] 47 C.F.R. Part 4.

[2] 47 C.F.R. § 9.3 defines an interconnected Voice over Internet Protocol (VoIP) service as a service that: (1) enables real-time, two-way voice communications; (2) requires a broadband connection from the user's location; (3) requires Internet protocol-compatible customer premises equipment; and (4) permits users generally to receive calls that originate on the public switched telephone network and to terminate calls to the public switched telephone network.

[3] For purposes of this discussion, we define broadband ISPs as including broadband Internet access service providers and/or broadband backbone ISPs. *See infra* para. 31.

[4] *See* Preserving the Open Internet, Broadband Industry Practices, GN Docket No. 09-191, WC Docket No. 07-52, *Report and Order,* 25 FCC Rcd 17905, 18083 (2010) (*Open Internet Order*); Public Safety and Homeland Security Bureau Seeks Comment on Whether the Commission's Rules Concerning Disruptions to Communications Should Apply to Broadband Internet Service Providers and Interconnected Voice over Internet Protocol Service Providers, *Public Notice*, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137. 25 FCC Rcd 8490 (2010) (rel. Jul. 2, 2010) (*PSHSB PN*).

[5] *See Local Telephone Competition: Status as of June 30, 2010*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission, Figure 2 (Mar. 2011), http://www.fcc.gov/Daily_Releases/Daily_Business/2011/db0321/DOC-305297A1.pdf (last visited May 11, 2011).

[6] *See Local Telephone Competition: Status as of June 30, 2009*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission, Figure 2 (Sept. 2010), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-301310A1.pdf (last visited May 11, 2011).

[7] *See* 9-1-1 Statistics, http://www.nena.org/911-statistics (last visited May 10, 2011).

[8] *See* Executive Order No. 12472, *Assignment of National Security and Emergency Preparedness Telecommunications Functions*, April 3, 1984 (49 F.R. 13471 (1984)), as amended by Executive Order 13286, *Amendment of Executive Orders, and Other Actions, in Connection With the Transfer of Certain Functions to the Secretary of Homeland Security,* February 28, 2003, and Executive Order 13407, *Public Alert and Warning System,* June 26, 2006.

our core responsibilities as an agency.

3. Recent significant examples of outages to broadband networks and services include:

- In June 2010, CenturyLink Internet experienced failures that affected approximately 30,000 customers on the Kitsap Peninsula (near Seattle, Washington),[9] and in a separate outage, affected approximately 100,000 customers across parts of Texas.[10] The Kitsap Peninsula outage lasted an hour according to company sources, but some customers said it lasted four times as long.[11] The Texas outage lasted over eight hours. During the outages, consumers, businesses and government were unable to place 9-1-1 or other calls over VoIP.
- In May 2010, AT&T U-Verse, AT&T's bundled high-speed Internet, digital TV, and digital phone service, experienced a 4.25 hour VoIP outage that reportedly affected its entire user base. AT&T has approximately 1.15 million U-Verse voice customers, but one public source indicates that the extent of how many customers were affected by the outage went unreported to the public.[12] For the duration of the outage, AT&T customers were not able to make emergency calls to 9-1-1.
- In March 2010, Comcast Internet and Digital Voice service was disrupted to customers in Nashville, Tennessee, and Atlanta, Georgia. Comcast customers experienced severely degraded service for at least two hours.[13] During the outage, local, state, and Federal government department and agency customers of Comcast in the affected areas were unable to conduct business via the Internet or make or receive telephone calls. Residential and business subscribers to Comcast Internet and Digital Voice services also were affected by the outage significantly affecting their ability to communicate (including calls to 9-1-1).

4. The resilience of the broadband communications infrastructure directly impacts the emergency preparedness and readiness posture of the United States.[14] As the above examples illustrate, outages to broadband networks can have a significant impact on emergency services, consumers, businesses, and governments. The most practical, effective way to maintain emergency preparedness and readiness is to work continuously to minimize the incidence of routine outages.

5. Since 2005, the Commission has required providers of interconnected VoIP services to supply 9-1-1 emergency calling capabilities to their customers as a mandatory feature of the service. "Interconnected" VoIP services allow a user generally to receive calls from and make calls to the legacy telephone network. Under our rules, interconnected VoIP providers must deliver all 9-1-1 calls to the local emergency call center; deliver the customer's call-back number and location information where the emergency call center is capable of receiving it; and inform their customers of the capabilities and

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[9] *See* http://www.kitsapsun.com/news/2010/jun/04/scattered-internet-outages-frustrate-businesses/ (last visited April 11, 2011).

[10] *See* http://www.kdhnews.com/news/story.aspx?s=42355 (last visited April 11, 2011).

[11] *See* infoTECH News, Scattered Internet Outages Frustrate Businesses, Web Surfers in North Kitsap, http://it.tmcnet.com/news/2010/06/04/4828578.htm (last visited March 1, 2011).

[12] FierceVoIP, AT&T's VoIP suffers outage, http://www.fiercevoip.com/story/ts-voip-suffers-outage/2010-05-27 (last visited March 1, 2011).

[13] VoIP Tech Chat, Comcast Outage and Phone Service Complaints, http://www.voiptechchat.com/voip/431/comcast-outage-and-phone-service-complaints/ (last visited March 1, 2011).

[14] *See* Presidential Policy Directive/PPD-8 National Preparedness (Mar. 30, 2011), http://www.dhs.gov/xabout/laws/gc_1215444247124.shtm (last visited April 12, 2011).

limitations of their VoIP 9-1-1 service.[15]

6. In addition, by Presidential Directives and Executive Orders the FCC has been assigned a critical role in the Nation's emergency preparedness and response efforts. Presidential Directives and Executive Orders and their implementing documents charge the FCC with ensuring the resiliency and reliability of the Nation's commercial and public safety communications infrastructure. National Security Presidential Directive/NSPD-51[16] establishes the framework by which the government can continue to perform its most critical roles during times of emergency.[17] As a result of this Directive, the FCC was assigned a Primary Mission Essential Function to "ensure continuous operations and reconstitution of critical communications and services."[18]

7. The FCC plays an active role in Emergency Support Function 2 (ESF2),[19] the communications branch of the National Response Framework,[20] which guides the Nation's conduct during an all-hazards response. Executive Order 12472, establishing the National Communications System (NCS), the functions of which include coordination of the planning for and provision of national security and emergency preparedness communications for the Federal government, also requires FCC participation.[21]

8. The Commission has many years of experience working with communications providers to improve communications resiliency and emergency readiness. In 2004, the Commission adopted its current outage reporting rules, which require the submission of data regarding significant outages. In adopting these rules, the FCC tailored them to impose minimal burdens on reporting providers, while still being able to receive critical data.[22] Compiling, analyzing and sharing this nationwide information has

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[15] 47 C.F.R. Part 9.

[16] Also known as Homeland Security Presidential Directive/HSPD-20.

[17] NSPD 51/HSPD20 provides a rapid and effective response to and recovery from a national emergency. It establishes the policy on the continuity of Federal government structures and operations. It also establishes "National Essential Functions" (NEFs), which prescribe continuity requirements for all executive departments and agencies to ensure that our constitutional government endures. NEFs include: 1) providing rapid and effective response to and recovery from the domestic consequences of an attack or other incident; and 2) providing for critical federal government services that address the health, safety and welfare needs of the United States. National Security Presidential Directive 51/Homeland Security Presidential Directive 20 (May 4, 2007), para. 5.

[18] Memorandum from John O. Brennan, Assistant to the President for Homeland Security and Counterterrorism, to Department and Agency Heads (Jun. 1, 2009).

[19] ESF 2 supports the restoration of the communications infrastructure, facilities, the recovery of systems and applications from cyber attacks, and coordinates Federal communications support to response efforts during incidents requiring a Federal Response. *See* http://www.fema.gov/pdf/emergency/nrf/nrf-esf-02.pdf (last visited April 21, 2011).

[20] The National Response Framework was developed by the U.S. Department of Homeland Security (DHS) pursuant to Homeland Security Presidential Directive-8. This Directive was enacted to strengthen the preparedness of the United States to prevent and respond to threatened or actual domestic terrorist attacks, major disasters, and other emergencies by requiring a national domestic all-hazards preparedness goal, establishing mechanisms for improved delivery of Federal preparedness assistance to State and local governments, and outlining actions to strengthen preparedness capabilities of Federal, State, and local entities. Homeland Security Policy Directive 8 (Dec. 17, 2003), replaced by Presidential Policy Directive 8 on March 30, 2011.

[21] *See supra* note 8.

[22] *See* New Part 4 of the Commission's Rules Concerning Disruptions to Communications, *Report and Order and Further Notice of Proposed Rule Making*, 19 FCC Rcd 16830, at 16841, 16861 16868-16870, 16903-16904, 16908, 16910- 16914 (2004) (*2004 Part 4 Order and FNPRM*); *see* also ATIS News Release*, ATIS Comments on the Federal Communications Commission's Data Collection Proposal* (Sept. 28, 2009), http://www.atis.org/PRESS/pressreleases2009/092809.htm (last visited May 9, 2011).

led to the development and refinement of industry best practices, which in turn has reduced the number of communications outages.[23] Over time, the value of this data has been recognized by industry and others.[24] As an example, wireline network outages potentially affecting 9-1-1 service are down approximately 50 percent from the peak. Without this bigger picture of industry network performance made possible by reporting and the sharing of data among Commission and industry network experts, such dramatic reductions would not have been possible. With the percent of VoIP-only households and businesses increasing, it is essential to our safety that we extend outage reporting to VoIP.

9. The Commission's existing approach includes the analysis and response to information received during an emergency. For instance, during Hurricane Katrina, the Commission received over 65 reports of outages from 21 providers. During a time when countless calls were placed to 9-1-1, the Commission's outage reporting data was the Federal government's primary and best source of information about the condition of critical communications infrastructure in the disaster area. Using this information the Commission was able to contact affected reporting providers to establish an *ad hoc* data-driven working group to help manage the crisis. The FCC was able to identify specific needs for security, fuel, and other support and help guide and prioritize Federal restoration efforts.[25] For example, outage data revealed that the Poydras St. Central Office, a vital communications hub in New Orleans, was functioning normally but required security protection. Based on information that the FCC provided, U.S. Marshals were sent to secure the site.

10. Currently, only providers of legacy circuit-switched voice and/or paging communications over wireline, wireless, cable, and satellite communications services must report communications outages.[26] Commission analysis of industry-wide outage reports has led to improvements in the engineering, provisioning, and deployment of communications infrastructure and services.[27] The Commission has been able to share its analysis with members of industry, providing a picture of recurring problems nationwide that an individual provider cannot know itself. This process has also made communications networks more robust to the effects of natural or man-made disasters, thereby improving our Nation's readiness posture. Reducing the number of communications outages greatly improves the resiliency of the communications critical infrastructure to withstand disruptions that would otherwise jeopardize the Nation's ability to communicate during emergency events, including to the Nation's 9-1-1 system.

11. In this proceeding, we seek to extend these benefits to the broadband communications

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[23] *See* 2009-2010 NSTAC Issue Review – *NSTAC: Enhancing National Security and Emergency Preparedness Through Communications (May 2010)*, http://www.ncs.gov/nstac/reports/2009%20-%202010%20Issue%20Review%20(FINAL).pdf (last visited April 12, 2011).

[24] *See* Network Reliability Steering Committee 2008-2009 Biennial Report (Apr. 2010), http://www.atis.org/nrsc/Docs/ATIS-0100029%20-%20NRSC%20Biennial%20Report.pdf (last visited May 9, 2011).

[25] Kneuer, J. U.S. Department of Commerce, The National Telecommunications and Information Administration (2006). *NTIA Comments to the Notice of Proposed Rulemaking,Rrecommendations of the Independent Panel Reviewing the impact of Hurricane Katrina on Communications Networks* (EB Docket No. 06-119), http://www.ntia.doc.gov/ntiahome/fccfilings/2006/katrina_082206.htm (last visited May 9, 2011).

[26] *See* 47 C.F.R. §§ 4.1-4.13. In 1992, the Commission established network outage reporting requirements for wireline providers. Notification by Common Carriers of Service Disruptions, *Report and Order*, CC Docket No. 91-273, 7 FCC Rcd 2010 (1992) (*1992 Part 4 Report and Order)*; *see also Memorandum Opinion and Order and Further Notice of Proposed Rulemaking*, 8 FCC Rcd 8517 (1993); *Second Report and Order*, FCC Rcd 39-1-1 (1994); *Order on Reconsideration of Second Report and Order*, 10 FCC Rcd 11764 (1995). In 2004, the Commission extended these reporting requirements to providers of wireless, cable, and satellite communications. *2004 Part 4 Order and FNPRM*, 19 FCC Rcd 16830 (2004).

[27] *See* Network Reliability Steering Committee Annual Report 2004 (Oct. 2005), http://www.atis.org/NRSC/Docs/2004_Annual_Report.pdf (last visited May 9, 2011).

networks frequently used for emergency response today. We propose to extend the Commission's Part 4 outage reporting requirements to include both interconnected VoIP service providers and broadband ISPs. This change would allow the Commission, and other Federal agencies, to track and analyze information on outages affecting broadband networks. The availability of this information would also help the Commission determine the extent of the problem nationwide, identify recurring problems, determine whether action can be taken immediately to help providers recover or prevent future outages, and ensure to the extent possible that broadband networks are prepared for natural and man-made disasters. Our proposed action will allow the Commission to use the same successful process it currently uses with wireline and wireless providers to refine and develop best practices to prepare broadband communications networks better for emergency situations.[28]

12. With respect to both interconnected VoIP service and broadband Internet service, we seek comment on one or more reporting thresholds below based on circumstances or events specific for that service or technology. We recognize that requiring interconnected VoIP service providers and broadband ISPs to report outages may impose a burden on them, and we particularly welcome comments quantifying this burden and recommendations to mitigate it. We believe that interconnected VoIP service providers and broadband ISPs already collect this information for their internal use and that reporting it on a confidential basis to the Commission would create a minimal burden. On balance, we believe that the significant benefits to the public resulting from the analysis of this outage information would outweigh any potential burden.

13. There may be additional circumstances or thresholds, not identified below, that should be included to improve our ability to address communication system vulnerabilities and help prevent future outages through the development and refinement of best practices and coordinating with individual and groups of reporting providers. We encourage interested parties to address these issues in the context of interconnected VoIP service or broadband Internet service. Further, we encourage commenters to address how the proposed information collection would facilitate best practices development and increased network security, reliability and resiliency throughout the United States and its Territories. Finally, we seek comment on relevant sources of authority.

II. BACKGROUND

14. In the *1992 Part 4 Report and Order*, the Commission established network outage reporting requirements for wireline providers.[29] In 2004, the Commission extended reporting requirements to include providers of wireless (including paging), cable, and satellite communications.[30]

15. The Commission uses outage information submitted pursuant to Part 4 of its rules to, *inter alia*, address communication system vulnerabilities and help prevent future outages. The Commission staff accomplishes this objective by using statistically meaningful trends in data as well as associated technical analysis to gather communications providers together in coordinated efforts to improve security, reliability and resiliency. Where necessary, the Commission also recommends policy changes to address persistent problems. In addition, the Commission works with each individual reporting service provider to monitor and address specific communications vulnerabilities identified in outage reports for that service provider.

16. As a result of reporting pursuant to the Commission's Part 4 rules, tangible positive results

[28] The FBI considers the cyber threat against the nation to be "one of the greatest concerns of the 21st century." *Id.* Steven Chabinsky, Deputy Ass't Director-Cyber Division, Fed. Bureau of Investigation (FBI), Testimony before the U.S. Senate Committee on the Judiciary, Subcommittee on Terrorism and Homeland Security (Nov. 17, 2009) (*Chabinsky Testimony*).

[29] *See generally 1992 Part 4 Report and Order*.

[30] *See generally 2004 Part 4 Order and NPRM*.

have been demonstrated and achieved.[31] For example, the frequency of wireline outages, which had spiked in 2008, has dramatically decreased since the issue was identified through the Commission's ongoing, systematic analyses of monthly wireline outages. Whenever there is a complete wireline outage, consumers cannot make 9-1-1 calls. This means that a dramatic reduction in wireline outages will result in a dramatic reduction in lost 9-1-1 calls. As the chart below illustrates, estimated lost 9-1-1 calls due to wireline outages were reduced by more than 50 percent when the Commission worked with the Network Reliability Steering Committee (NRSC) to reduce wireline outages. With the Commission as the central collecting point of wireline outage reporting information, the staff, working on a systematic and ongoing basis with the NRSC was able to identify and analyze trends and possible causes of the outages from the data of not just the individual carrier's network, but also from carriers' networks across the industry. As a result of the conclusions drawn and the additional work of the NRSC,[32] carriers were able to take corrective action. These reductions occurred because of the Commission's work to piece together the overall picture of industry network performance through analysis of outage reporting data and the sharing of data among Commission and industry network experts. As another example, in 2005 and 2006, the Commission's Network Outage Reporting System (NORS) revealed an extremely high incidence of outages affecting back-up-paths in high-capacity transport circuits.[33] The Commission worked with the NRSC to develop and implement revisions to existing best practices to reduce the length of time that back-up-paths were inoperative. Consequently, the number of these outages dropped substantially by more than 50 percent,[34] increasing the resiliency of the communications infrastructure and increasing the availability of public safety communication services.

[31] *See* Network Reliability Steering Committee 2008-2009 Biennial Report (Apr. 2010), http://www.atis.org/nrsc/Docs/ATIS-0100029%20-%20NRSC%20Biennial%20Report.pdf (last visited May 9, 2011).

[32] The NRSC established a team to analyze the causes of these outages, found that the outages were due primarily to cable damage, identified a set of best practices that would prevent these types of outages, and released to the public a bulletin describing their findings. ATIS, NRSC Bulletin No. 2009-006 Wireline Outages (Oct. 2009). *See* http://www.atis.org/nrsc/Bulletins/NRSC_Wireline_Bulletin_2009-006.pdf (last visited March 1, 2011).

[33] Presentation by Jeffery Goldthorp, Chief, Communications Systems Analysis Division, Public Safety & Homeland Security Bureau, Federal Communications Commission, "Analysis of Network Outage Reports for NRSC Meeting", to the Network Reliability Steering Committee of the Alliance for Telecommunications Industry Solutions on October 19, 2006, Viewgraph 6 (filed in the instant proceeding on May 12, 2011).

[34] Presentation by John Healy, Telecommunications Specialist, Communications Systems Analysis Division, Public Safety & Homeland Security Bureau, Federal Communications Commission, "Analysis of Network Outage Reports for NRSC Meeting", to the Network Reliability Steering Committee on July 24, 2007, Viewgraph 6 (filed in the instant proceeding on May 12, 2011).

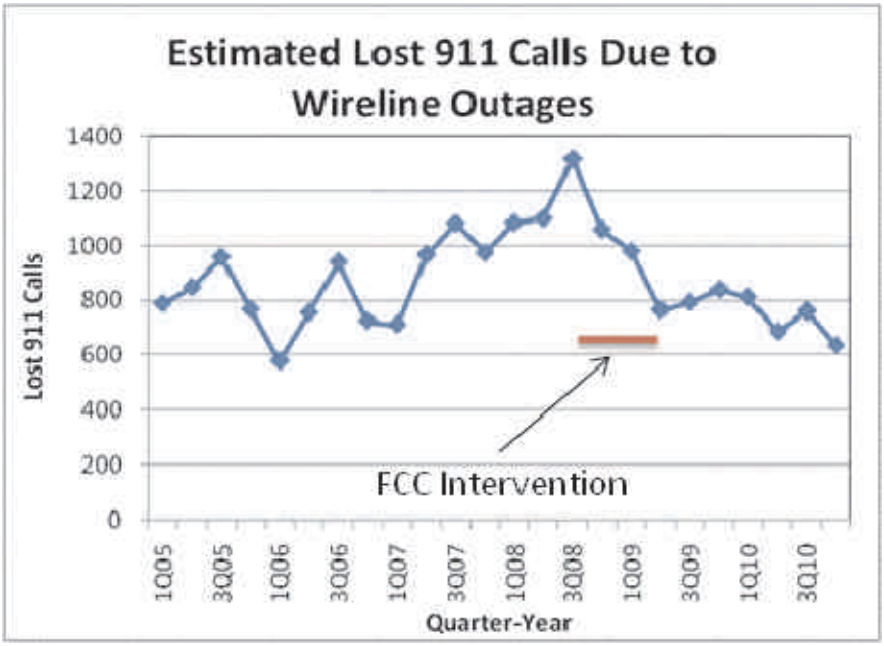

Figure 1: Estimated Reduction in Lost 9-1-1 Calls

17. In 2010, Commission staff discerned from outage reports that outages associated with delivery of 9-1-1 service were being caused by a relatively small number of factors, each of which could be addressed by applying a known best practice. The Bureau issued a Public Notice urging communications providers to implement these practices widely in their networks.[35] Further, in a number of cases, individual service providers have implemented improvements to their networks after the Commission notified it of problems identified through NORS. The net result of the decrease in the frequency of reported outages is an increase in the resiliency of the communications infrastructure and an increase in the availability of the public safety services that rely on the communications infrastructure.

18. The Commission has not until now proposed extending the outage reporting requirements to interconnected VoIP service providers, but in 2005, the Commission sought comment on whether network outage reporting requirements should be extended to include broadband Internet access service providers.[36] We received minimal information in response to the *Wireline Broadband ISP Order and NPRM.*

19. The *National Broadband Plan* recommended that the Commission extend the Part 4 outage reporting rules to broadband ISPs and interconnected VoIP service providers as "the lack of data limits our understanding of network operations and of how to prevent future outages."[37]

20. In July 2010, the Bureau sought comment on a variety of issues related to whether, and if so how, the Commission should extend coverage of its Part 4 rules to apply to broadband ISPs and

[35] FCC'S Public Safety and Homeland Security Bureau Reminds Telecommunications Service Providers of Importance of Implementing Advisory Committee 9-1-1 and Enhanced 9-1-1 Services Best Practices, *Public Notice*, DA 10-494, rel. Mar. 24, 2010.

[36] Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, *Report and Order and Notice of Proposed Rulemaking*, 20 FCC Rcd 14853, 14933 ¶ 154 (2005) (*Wireline Broadband ISP Order and NPRM*), *aff'd. sub nom. Time Warner Telecom Inc. v. FCC*, 507 F.3d 205 (3d Cir. 2007).

[37] Omnibus Broadband Initiative, *Connecting America: The National Broadband Plan* (Recommendation 16.6, Mar. 2010) (*NBP*).

interconnected VoIP service providers.[38] The Bureau sought to understand better the issues related to these subject areas, and has considered the information gathered in response to the *PSHSB PN* to prepare this *NPRM*. Arguing against extending the Part 4 rules, some commenters claim that IP-based service providers already have sufficient market-based incentives to ensure the security, reliability and resiliency[39] of their networks and services.[40] For example, AT&T has stated that many providers already voluntarily participate in public-private partnerships to share information and to promulgate best practices in large part because it is in their competitive self-interest to ensure that they develop and implement procedures and practices that make their networks as reliable as they can realistically be.[41] We are unsure, however, how many service providers have implemented measures to maintain the high-quality security, reliability and resiliency of their respective services. The economic justification to ensure such service appears to be limited, and does not consider network externalities.[42] Moreover, even if incentives did motivate individual market participants to optimize their own reliability, they do not necessarily optimize systemic reliability. Our experience in other settings leads us to believe that service providers are loathe to share detailed information about network outages for competitive reasons and this impacts the overall health of the communications network.

21. Several commenters maintain that extending outage reporting requirements is not necessary essentially because the Internet was designed to reroute traffic in the event portions of the network become inoperable, and thus an outage of a facility for broadband Internet access may have no effect on the ability to continue to send or receive traffic.[43] Yet, it is clear that significant communications outages of interconnected VoIP service (as well as broadband Internet service) occur for a variety of reasons, affecting the ability to send and receive traffic. Several commenters argue that the burdens of extending the Part 4 requirements outweigh the benefits or are otherwise not justified.[44] We are not persuaded,

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[38] *See generally PSHSB PN,* 25 FCC Rcd 8490 (2010).

[39] Resiliency refers to the ability of operable systems to recover from mishap, change, misfortune, or variation in mission or operating requirements.

[40] Comments of AT&T , ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, Aug. 2, 2010, at 5-6 (AT&T Comments); Comments of MetroPCS, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 2, 2010, at 4-8 (MetroPCS Comments); Comments of National Cable & Telecommunications Association, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 2, 2010, at 4-5 (NCTA Comments); Comments of United States Telecom Association, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 2, 2010, at 2-5 (US Telecom Comments); Comments of QWEST Communications International, Inc., ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 2, 2010, at 4-7; Reply Comments of Sprint Nextel Corporation, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 16, 2010, at 2-3 (Sprint Nextel Reply Comments); Reply Comments of T-Mobile USA, Inc., ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 16, 2010, at 2 (T-Mobile USA Reply Comments); and Reply Comments of RNK, Inc., ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 16, 2010, at 3 (RNK Reply Comments). Unless otherwise stated, all filed comments referenced herein refer to comments filed in response to the *PSHSB PN.*

[41] AT&T Comments, filed Aug. 2, 2010, at 5-6.

[42] *See* Reply Comments of National Association of State Utility Consumer Advocates, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 16, 2010, at 2 (NASUCA Comments) (arguing that many service providers have decided that reliability and security measures are not economically justified).

[43] *See* MetroPCS Comments, filed Aug.2, 2010, at 6; *see also* Comments of Verizon and Verizon Wireless, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 2, 2010, at 3-6 (Verizon Comments); NCTA Comments, filed Aug. 2, 2010, at 4-5; and US Telecom Comments, filed Aug. 2, 2010, at 2-4.

[44] Comments of Laurence Brett Glass, D/B/A LARIAT, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 2, 2010, at 2 (LARIAT Comments); Reply Comments of American Cable (continued….)

however, because such burdens can be mitigated through online, automated reporting mechanisms. Burdens associated with reporting and transparency would be significantly less intrusive than those associated with direct operational mandates, and the types of information that would be needed in such outage reporting are already readily available to reporting entities via the normal network management processes. Moreover, small service providers would not be unfairly burdened if, as proposed in this proceeding, thresholds and metrics were calibrated such that smaller service providers would probably file a report in limited circumstances. Finally, all service providers stand to gain with a nationwide broadband infrastructure that is reliable, but currently providers are not incentivized to achieve that goal. The Commission's outage reporting process and resulting analysis would help to move the industry toward a critical public safety objective.

22. Several commenters claim that the Commission has no legal authority or has shown no legal authority to extend its Part 4 requirements to VoIP service providers and broadband ISPs.[45] The Commission, however, has direct statutory authority to protect and promote the availability of 9-1-1 services for customers of interconnected VoIP services, as we explain in Section VII of this *NPRM*. Section VII also seeks comments on other relevant sources of authority.

23. The proposed action here is consistent with policies that the Commission has adopted in recent years to address the increasing reliance of the American public on broadband communications technology. In 2005, the Commission adopted rules requiring providers of interconnected VoIP service to supply E9-1-1 capabilities to their customers as a standard feature from wherever the customer is using the service.[46] Moreover, interconnected VoIP service providers generally must transmit all 9-1-1 calls, including Automatic Number Identification and the caller's Registered Location for each call, to the PSAP, designated statewide default answering point, or appropriate local emergency authority.[47] In 2006, the Commission began requiring interconnected VoIP service providers to contribute to the universal service fund because they are providers of interstate telecommunications[48] and VoIP service providers

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Association, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 16, 2010, at 2-3; RNK Reply Comments, Aug. 16, 2010, at 2; and Comments of the Voice on the Net Coalition, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 2, 2010, at 7.

[45] AT&T Comments, filed Aug. 2, at 10; LARIAT Comments, filed Aug. 2, 2010, at 3; MetroPCS Comments, filed Aug. 2, 2010, at 3; Sprint Nextel Reply Comments, filed Aug. 2, 2010, at 1-2; Comments of the United States Internet Service Provider Association, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 2, 2010, at 5.

[46] IP-Enabled Services; E9-1-1 requirements for IP-Enabled Service Providers, WC Docket No. 04-36, WC Docket No. 05-196, *First Report and Order and Notice of Proposed Rulemaking*, 20 FCC Rcd 10245, 10246 (2005) (*VoIP 9-1-1 Order and VoIP 9-1-1 NPRM)*. In 2008, Congress enacted the New and Emerging Technologies 9-1-1 Improvement Act of 2008 that, among other things, amended the 9-1-1 Act to codify the Commission's E9-1-1 rules for interconnected VoIP providers. New and Emerging Technologies 9-1-1 Improvement Act of 2008, Pub. L. No. 110-283, 122 Stat. 2620 (2008).

[47] 47 C.F.R. § 9.5(b). The Registered Location is "[t]he most recent information obtained by an interconnected VoIP service provider that identifies the physical location of an end user." 47 C.F.R. § 9.3.

[48] *See* Universal Service Contribution Methodology; Federal-State Joint Board on Universal Service; 1998 Biennial Regulatory Review -- Streamlined Contributor Reporting Requirements Associated with Administration of Telecommunications Relay Service, North American Numbering Plan, Local Number Portability, and Universal Service Support Mechanisms; Telecommunications Services for Individuals with Hearing and Speech Disabilities, and the Americans with Disabilities Act of 1990; Administration of the North American Numbering Plan and North American Numbering Plan Cost Recovery Contribution Factor and Fund Size; Number Resource Optimization; Telephone Number Portability; Truth-in-Billing and Billing Format; IP-Enabled Services, WC Docket Nos. 06-122 and 04-36, CC Docket Nos. 96-45, 98-171, 90-571, 92-237, 99-200, 95-116, and 98-170, *Report and Order and Notice of Proposed Rulemaking*, 21 FCC Rcd 7518 (2006) *(2006 Universal Service Order*).

were subject to obligations under the Communications Assistance for Law Enforcement Act.[49] In 2007, the Commission extended disability access requirements that previously applied only to telecommunications service providers and equipment manufacturers under section 255 of the Communications Act of 1934,[50] as amended, to interconnected VoIP service providers.[51] In 2008, the Commission adopted a system for assigning users of Internet-based Telecommunications Relay Services (TRS),[52] specifically Video Relay Service (VRS)[53] and Internet Protocol (IP) Relay,[54] ten-digit telephone numbers linked to the North American Numbering Plan (NANP),[55] finding that "utilization of NANP numbers . . . will provide Internet-based TRS users a reliable and consistent means by which they may receive calls from voice telephone users in the same way that voice telephone users are called."[56] Since 2008, interconnected VoIP service providers have been required to report subscribership information on FCC Form 477.[57]

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[49] *See* Communications Assistance for Law Enforcement Act and Broadband Access and Services*,* 20 FCC Rcd 14989, 14991-92, ¶ 8 (2005), *aff'd, Am. Council on Educ. v. FCC,* 451 F.3d 226 (D.C. Cir. 2006).

[50] *See* 47 U.S.C. § 255. Section 255 was added to the Communications Act by the Telecommunications Act of 1996. Telecommunications Act of 1996, Pub. L. 104-104, 110 Stat. 56 (1996). *See also* 47 C.F.R. §§ 6.1-6.23 (Commission rules implementing section 255).

[51] *See* IP-Enabled Services; Implementation of Sections 255 and 251(a)(2) of The Communications Act of 1934, as Enacted by The Telecommunications Act of 1996: Access to Telecommunications Service, Telecommunications Equipment and Customer Premises Equipment by Persons with Disabilities; Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities; The Use of N11 Codes and Other Abbreviated Dialing Arrangements, WC Docket No. 04-36; WT Docket No. 96-198; CG Docket No. 03-123; CC Docket No. 92-105, *Report and Order*, 22 FCC Rcd 11275 (2007) (*TRS VoIP Order*).

[52] TRS, created by Title IV of the Americans with Disabilities Act of 1990, enables a person with a hearing or speech disability to access the nation's telephone system to communicate with voice telephone users through a relay provider and a Communications Assistant (CA). *See* Pub. L. No. 101-336, § 401, 104 Stat. 327, 336–69 (1990); 47 U.S.C. § 225; 47 C.F.R. § 64.601 *et seq.* (implementing regulations).

[53] VRS is an Internet-based form of TRS that allows individuals with hearing or speech disabilities to communicate using sign language through video equipment. The video link allows the CA to view and interpret the VRS user's signed conversation, and relay the conversation back and forth between the VRS user and the called party. *See* 47 C.F.R. § 64.601(17); Telecommunications Relay Services for Individuals with Hearing and Speech Disabilities, CC Docket No. 98-67, *Report and Order and Further Notice of Proposed Rulemaking*, 15 FCC Rcd 5140, 5152–54, ¶¶ 21–27 (Mar. 6, 2000) (*2000 TRS Order*).

[54] IP Relay is an Internet-based form of TRS that permits individuals with hearing or speech disabilities to communicate in text using a computer (or other similar device) and the Internet, rather than with a teletypewriter (TTY) and the Public Switched Telephone Network (PSTN). See Provision of Improved Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities, CC Docket No. 98-67, *Declaratory Ruling and Second Further Notice of Proposed Rulemaking*, 17 FCC Rcd 7779 (Apr. 22, 2002) (*IP Relay Declaratory Ruling & Second FNPRM*).

[55] The NANP is the basic numbering scheme that permits interoperable telecommunications service within the United States, Canada, Bermuda, and most of the Caribbean. *See* Administration of the North American Numbering Plan, CC Docket No. 92-237, *Report and Order*, 11 FCC Rcd 2588, 2590, ¶ 3 (July 13, 1995) (*NANP Order*).

[56] Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities; E9-1-1 Requirements for IP-Enabled Service Providers, CG Docket No. 03-123; WC Docket No. 05-196, *Report and Order and Further Notice of Proposed Rulemaking*, 23 FCC Rcd 11591, 11591-592 (2008).

[57] *See* 47 C.F.R. § 43.11(a); *see also* Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership, WC Docket No. 07-38, *Report and Order and Further Notice of Proposed Rule Making*, 23 FCC Rcd 9691, 9704-07 25-31 (2008) (*2008 Development of Data on VoIP Subscribership*); Development of Nationwide Broadband Data to (continued….)

24. Recently, the Commission launched a broad inquiry into how NG9-1-1 can enable the public to obtain emergency assistance by means of advanced communications technology beyond traditional voice-centric devices.[58] The Commission also recently released a *Network Reliability NOI* that seeks comment on a broad range of issues regarding the reliability and resiliency of our Nation's communications networks.[59] Whereas those inquiries were commenced to gather information about nascent technologies and to explore issues on which the Commission possessed relatively limited information, the analysis of whether to extend outage reporting is supported by five years of experience in collecting and analyzing similar data for legacy technologies pursuant to our Part 4 rules. A *Public Notice* seeking comment on the same subject was released in 2010. Furthermore, the technology involved is mature and widely deployed in our critical communications infrastructure.

III. EXTENDING OUTAGE REPORTING REQUIREMENTS

A. Interconnected VoIP Service Providers

25. As the Commission has recognized, interconnected VoIP services increasingly are viewed by consumers as a substitute for traditional telephone service.[60] This is also reflected in our 9-1-1 emergency call system today, where we estimate that approximately 28 percent of residential wireline 9-1-1 calls are made using VoIP service. Reflecting this trend and the increased reliance by the public on interconnected VoIP services, we propose to extend our outage reporting rules to interconnected VoIP service providers—just as 9-1-1 service requirements apply to these providers. In June 2010, there were 122 million end-user switched access lines in service and 29 million interconnected residential and business VoIP subscriptions in the United States, or 151 million wireline retail local telephone service subscriptions in total.[61] Between June 2009 and June 2010, interconnected residential and business VoIP subscriptions increased by 21 percent (from 24 million to 29 million) and retail switched access lines decreased by eight percent (from 133 million to 122 million). The combined effect was an annual

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Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership, WC Docket No. 07-38, *Order on Reconsideration*, 23 FCC Rcd 9800 (2008) (*2008 Broadband Data Gathering Reconsideration Order*). FCC Form 477 collects information about broadband connections to end user locations, wired and wireless local telephone services, and interconnected VoIP services, in individual states.

[58] Framework for Next Generation 9-1-1 Deployment, *Notice of Inquiry*, 25 FCC Rcd 1786925, (Dec. 2010).

[59] Reliability and Continuity of Communications Networks, Including Broadband Technologies, Effects on Broadband Communications Networks of Damage or Failure of Network Equipment or Severe Overload and Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks, PS Docket No. 11-60; EB Docket No. 06-119, FCC 11-55, *Notice of Inquiry*, 2011 FCC LEXIS 1365, 2011 WL 1341354, (April 7, 2011).

[60] *See* High-Cost Universal Service Support; Federal-State Joint Board on Universal Service; Lifeline and Link Up; Universal Service Contribution Methodology; Numbering Resource Optimization; Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Developing a Unified Intercarrier Compensation Regime; Intercarrier Compensation for ISP-Bound Traffic; IP-Enabled Services, WC Docket No. 05-337; CC Docket No. 96-45; WC Docket No. 03-109; WC Docket No. 06-122; CC Docket No. 99-200; CC Docket No. 96-98; CC Docket No. 01-92; CC Docket No. 99-68; WC Docket No. 04-36, *Order on Remand and Report and Order and Further Notice of Proposed Rulemaking*, 24 FCC Rcd 6475, 6590 ¶ 205 n.523 (2008); *see also* Telephone Number Requirements for IP-Enabled Services Providers; Local Number Portability Porting Interval and Validation Requirements; IP-Enabled Services; Telephone Number Portability; CTIA Petitions for Declaratory Ruling on Wireline-Wireless Porting Issues; Final Regulatory Flexibility Analysis; Numbering Resource Optimization, WC Docket No. 07-243; WC Docket No. 07-244; WC Docket No. 04-36; CC Docket No. 95-116; CC Docket No. 99-200, *Report and Order, Declaratory Ruling, Order on Remand, and Notice of Proposed Rulemaking*, 22 FCC Rcd 19531, 19547 ¶ 28 (2007).

[61] *See supra* note 5, Figure 1.

decrease of four percent in wireline retail local telephone service subscriptions (from 157 million to 151 million).[62] Unlike legacy telephone service, however, the Commission has no mechanism to identify outages of VoIP service that impact end users and, thus, cannot address the cause of 9-1-1 outages relating to VoIP service. For example, in a recent service outage involving the AT&T U-Verse platform, press reports stated that a server failure impacted U-Verse interconnected VoIP service in AT&T's entire 22-state local phone service area. How many of the approximately 1.15 million U-Verse interconnected VoIP service customers were actually affected and for what length of time is not clear.[63] As noted, applying outage reporting requirements to these services brings the reporting requirements into line with existing E9-1-1 obligations,[64] as well as our objectives in the open proceeding on NG9-1-1.[65]

26. We propose to apply our outage reporting requirements to both facilities-based and non-facilities-based interconnected VoIP service providers.[66] Both groups are subject to our Part 9 E9-1-1 obligation. Furthermore, we are concerned that a reporting requirement that extends only to facilities-based interconnected VoIP service providers would not result in reporting of all significant VoIP service outages experienced by end users and my put in jeopardy the ability to receive 9-1-1 calls. Our current rules require communications providers to report on service outages that affect their customers even if they do not own or operate the facilities that failed.[67] We seek comment on this proposal.

27. Currently, under Part 4 of our rules, an "outage" is defined to include "a significant degradation in the ability of an end user to establish and maintain a channel of communications as a result of failure or degradation in the performance of a communications provider's network."[68] Our rules tailor the definition of a reportable significant degradation to communications over cable, telephony carrier tandem, satellite, System Signaling 7 ("SS7"), wireless, or wireline facilities.[69] Broadband networks

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[62] *Id.*

[63] *See* FierceVoIP, AT&T's VoIP suffers outage, http://www.fiercevoip.com/story/ts-voip-suffers-outage/2010-05-27 (last visited March 1, 2011).

[64] *See* IP-Enabled Services; E9-1-1 Requirements for IP-Enabled Service Providers, *First Report and Order and Notice of Proposed Rulemaking*, 20 FCC Rcd 10245 (2005).

[65] *See supra* note 58 and accompanying text.

[66] Facilities-based interconnected VoIP service providers own and operate the broadband access communications infrastructure required to deliver VoIP services. They may provide retail VoIP services directly to residential and business customers or they may provide wholesale VoIP services to other businesses, including non-facilities-based VoIP service providers that resell VoIP service to end users. S*ee March 2011 Local Competition Report,* Figure 5. Approximately 17 percent of the 24 million reported service feature subscriptions was attributable to stand-alone non-ILEC providers, a figure which includes "over the top" non-facilities-based providers. *Id.* Unlike Vonage or several other non-facilities-based VoIP services, facilities-based VoIP is not an application that is issued "over-the top" of a high-speed Internet access service purchased by a consumer. Significantly, facilities-based VoIP customers do not need to subscribe to broadband Internet service, and their providers do not route their respective traffic over the public Internet. Rather, the facilities-based VoIP service is based on specifications that typically involve the use of a managed IP network. Many companies offer IP-enabled services over these managed networks, including voice and video services that are distinct from the high-speed Internet access service.

[67] 47 C.F.R. § 4.9.

[68] 47 C.F.R. § 4.5(a).

[69] With respect to cable facilities, reporting is required when an outage of at least 30 minutes is experienced on any facilities owned, operated, leased, or otherwise utilized that: "(1) Potentially affects at least 900,000 user minutes of telephony service; (2) Affects at least 1,350 DS3 minutes: (3) Potentially affects any special offices and facilities. . .; or (4) Potentially affects a 9-1-1 special facility . . . ." 47 C.F.R. §4.9(a). With respect to tandem switches (or their equivalents) and interoffice facilities used in the provision of interexchange or local exchange communications, reporting is required when an outage is experienced for at least 30 minutes in which at least 90,000 calls are blocked or at least 1,350 DS3-minutes are lost. If technically feasible, these providers must use real-time blocked calls to determine whether criteria for reporting are met. 47 C.F.R. §4.9(b). With respect to satellite facilities, reporting is (continued….)

operate differently than legacy networks, so the impact of outages is likely to be different. Hence, we seek comment on the definition of "outage" as applicable to these providers. We believe that a complete loss of the ability to complete calls should be included. We seek comment on whether there should also be a threshold based on lost or delayed packets. For example, should the Commission use a concept such as "loss of generally-useful availability or connectivity" and how should we define it? Should we adopt the metrics used by the Internet Engineering Task Force (IETF),[70] such as packet loss[71], round-trip latency[72], and jitter?[73] The Commission recognizes that wireless and satellite networks include specific latency challenges not found in wireline-only networks. Therefore, should the thresholds be altered to address the unique architectural characteristics and challenges of wireless, satellite, cable, and wireline systems used by interconnected VoIP service providers? If the thresholds need to be altered, what values should be used to represent the loss of generally-useful availability and connectivity? How should the concept itself be revised to provide more useful information for analysis purposes? What voice quality-related network metrics are routinely reported to operations support systems in carrier-operated VoIP architectures? Do, for example, the Real-time Transport Control Protocol (RTCP)[74] round-trip and Session Initiation Protocol (SIP) Event Package for Voice Quality Reporting[75] provide guidance for

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required when an outage of at least 30 minutes is experienced on facilities owned, operated, leased, or otherwise utilized that manifests itself as a failure of any of the following key system elements: One or more satellite transponders, satellite beams, inter-satellite links, or entire satellites. In the case of Mobile Satellite Service, with limited exception, the failure of any gateway earth station is also a reportable outage. 47 C.F.R. §4.9(c)(1). All satellite communications providers must report outages of at least 30 minutes on any facilities owned, operated, leased, or otherwise utilized that manifests itself as: "(i) A loss of complete accessibility to at least one satellite or transponder; (ii) A loss of a satellite communications link that potentially affects at least 900,000 user-minutes . . . ; (iii) Potentially affecting any special offices and facilities . . . other than airports; or (iv) Potentially affecting a 9-1-1 special facility . . . ." 47 C.F.R. §4.9(c)(2). With respect to SS7 facilities, reporting is required when an outage of at least 30 minutes is experienced on facilities owned, operated, leased, or otherwise utilized that manifests "as the generation of at least 90,000 blocked calls based on real-time traffic data or at least 30,000 lost calls based on historic carried loads." 47 C.F.R. §4.9(d). With respect to wireless facilities, reporting is required when an outage of at least 30 minutes is experienced on facilities owned, operated, leased, or otherwise utilized: "(1) Of a Mobile Switching Center (MSC): (2) That potentially affects at least 900,000 user minutes of either telephony and associated data (2nd generation or lower) service or paging service; (3) That affects at least 1,350 DS3 minutes; (4) That potentially affects any special offices and facilities . . . other than airports through direct service facility agreements; or (5) That potentially affects a 9-1-1 special facility . . . ." 47 C.F.R. § 4.9(e). With respect to wireline facilities, reporting is required when an outage of at least 30 minutes is experienced on facilities owned, operated, leased, or otherwise utilized: "(1) Potentially affects at least 900,000 user minutes of either telephony or paging; (2) Affects at least 1,350 DS3 minutes; (3) Potentially affects any special offices and facilities . . . ; or (4) Potentially affects a 9-1-1 special facility . . . ." 47 C.F.R. §4.9(f).

[70] The Internet Engineering Task Force (IETF) is a large, open, international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. *See* http://www.ietf.org/about/ (last visited May 10, 2011).

[71] *See* RFC 2680 A One-way Packet Loss Metric for IP Performance Metrics (IPPM) (Sept. 1999), https://datatracker.ietf.org/doc/rfc2680/?include_text=1 (last visited March 1, 2011).

[72] *See* RFC 2681 A Round-Trip Delay Metric for IP Performance Metrics (IPPM) (Sept. 1999), https://datatracker.ietf.org/doc/rfc2681/ (last visited March 1, 2011).

[73] *See* RFC 3393 IP Packet Delay Variation Metric for IP Performance Metrics (IPPM) (Nov. 2002), http://tools.ietf.org/html/rfc3393 (last visited March 1, 2011). *See also* RFC 3550 RTP – A Transport Protocol for Real-Time Applications (Jul. 2003), http://www.ietf.org/rfc/rfc3550.txt (last visited March 1, 2011) for a discussion on estimating the interarrival jitter.

[74] *See* RFC 3550 RTP: A Transport Protocol for Real-Time Applications (Jul. 2003), http://www.ietf.org/rfc/rfc3550.txt (last visited March 1, 2011).

[75] *See* RFC 6035 Session Initiation Protocol Event Package for Voice Quality Reporting (Nov. 2010), http://datatracker.ietf.org/doc/rfc6035/?include_text=1 (last visited March 1, 2011).

suitable metrics that are already being collected for purposes other than outage reporting? How should the number of potentially affected users be counted for interconnected VoIP service providers? Can the number of assigned telephone numbers[76] for non-mobile VoIP service users be used in a manner similar to what is used for wireline service providers? We recognize the difficulty of distinguishing precisely when a VoIP end system cannot place a call as opposed to when it is simply temporarily disconnected from the network due to user choice or home network failure. Can statistical measures that compare typical to current device registration counts (*e.g.*, number of active SIP registration entries) be used to detect and measure large-scale outages?

28. For wireless service providers, the current rules require the service provider to estimate the simultaneous call capacity lost and then multiply the result by a concentration ratio of eight (to convert the number of users affected to the number of potentially affected users).[77] Should a similar construct be used for mobile VoIP service users? Is there a direct estimate of the number of potentially affected users that would be preferable? For both wireline and wireless service providers, should the failure of core routers, network servers, SIP proxy servers, Serving General Packet Radio Service (GPRS) and Gateway GPRS support nodes,[78] call session control function (CSCF)[79], home subscriber servers (HSS),[80] root name servers,[81] provider-operated Domain Name System (DNS) servers,[82] Dynamic Host Control Protocol (DHCP) servers,[83] Call Agents,[84] Session Border Controllers,[85] Signaling Gateways,[86] or some other type of communications equipment be reportable similar to the current reporting requirement for Mobile Switching Center failures? Should special considerations be given to services provided via VoIP to Public Safety Answering Points (PSAPs)? How should outages that are observable by end users as

[76] "Assigned numbers" are defined as the telephone numbers working in the Public Switched Telephone Network under an agreement, such as a contract or tariff, at the request of specific end users or customers for their use. *See* 47 C.F.R. § 4.7(b).

[77] 47 C.F.R. § 4.9 Outage reporting requirements – threshold criteria.

[78] A Serving GPRS support node (SGSN) is responsible for the delivery of data packets from and to the mobile stations within its geographical service area. The Gateway GPRS support node (GGSN) is responsible for the interworking between the GPRS network and external packet switched networks, like the Internet and X.25 networks.

[79] The Call Session Control Function (CSCF) is a central component to signaling and control within the IP Multimedia Subsystem (IMS) network. The CSCF is responsible for all signaling within the IMS.

[80] The Home Subscriber Server (HSS) for IMS networks is analogous to the Home Location Register (HLR) in mobile networks. The HSS acts as a central repository of all subscriber-specific authorizations and service profiles and preferences for an IMS network.

[81] A root name server is a name server for the Domain Name System's root zone and translates host names into IP addresses.

[82] The Domain Name System translates Internet domain and host names to IP addresses.

[83] Dynamic Host Control Protocol is a protocol that assigns unique IP addresses to devices, then releases and renews these addresses as devices leave and re-join the network.

[84] A Call Agent performs similar functions as a traditional central office telephony switch by controlling the signaling communication between phones, routers, and trunks during call setup and teardown.

[85] A Session Border Controller is a VoIP session-aware device that controls call admission to a network at the border of that network, and optionally (depending on the device) performs a host of call-control functions to ease the load on the call agents within the network. *See* http://www.metaswitch.com/sbc-session-border-controller/what-is-sbc.aspx (last visited May 11, 2011).

[86] A Signaling Gateway is a network component responsible for transferring signaling messages (*i.e.*, information related to call establishment, billing, location, short messages, address conversion, and other services) between signaling nodes that communicate using different protocols and transport media. Signaling conversion is often from Signaling System 7, signaling used in traditional circuit-switched telephony, to IP.

performance degradations (*e.g.*, increased latency and/or jitter) be addressed? How should we account for those differences in our outage reporting rules? Should the same or a different standard apply to interconnected VoIP service providers who provide service to end users with wireless applications?

29. Based on how interconnected VoIP service is typically configured and provided, we propose that a significant degradation of interconnected VoIP service exists and must be reported when an interconnected VoIP service provider has experienced an outage or service degradation for at least 30 minutes: (a) on any major facility (*e.g.,* Call Agent, Session Border Controller, Signaling Gateway, CSCF, HSS) that it owns, operates, leases, or otherwise utilizes; (b) potentially affecting generally useful availability and connectivity of at least 900,000 user minutes (*e.g.*, average packet loss of greater than one percent for 30,000 users for 30 minutes); or (c) otherwise potentially affecting special offices, or special facilities, including 9-1-1 PSAPs. We seek comment on whether the proposed reporting thresholds are appropriate. Should some other analogous threshold be considered for interconnected VoIP service providers? Should the thresholds be equally applied to redundant facilities?

30. More generally, we request comments on: the costs, burdens and benefits of our proposed rules on outage reporting by interconnected VoIP service providers, and whether the proposed rules would promote the reliability, resiliency and security of 9-1-1 and other communications over interconnected VoIP service and the networks that support such service; whether there are other performance objectives that we should address; and whether better alternatives exist, including more narrowly tailored rules, that would maximize the potential benefits to society or would accomplish the same objectives in a less costly, less burdensome, and/or more effective manner.

B. Broadband Internet Service Providers

31. Interconnected VoIP services ride over broadband networks: If the underlying communications network fails, the VoIP service, including its Commission-mandated 9-1-1 capabilities, will fail as well. Accordingly, we propose to extend our outage reporting rules to include broadband ISPs, a term which, for purposes of this discussion, includes broadband Internet access service providers and broadband backbone ISPs.[87] While there is increasing evidence that major outages are occurring on these providers' facilities,[88] and those outages may disable 9-1-1 and other service capabilities, currently there are no Commission requirements to report such outages**.** The Commission accordingly is unable to facilitate resolution, analyze underlying causes, and support the development of best practices, all of which would ultimately lead to better overall network performance, particularly for emergency response. We seek comment on all aspects of this proposal.

32. Further, we seek comment on whether both facilities-based and non-facilities based broadband ISPs[89] should be required to report outages that meet a certain threshold. We believe that inclusion of both facilities-based and non-facilities-based providers would ensure outage reporting covers Internet consumers and businesses that purchase Internet access through less traditional access arrangements (*e.g*., prepaid Internet access cards). To better understand the effect of broadband outages, it is helpful to understand the functions and types of broadband ISPs.

33. Some broadband ISPs provide Internet access directly connecting to end users, while others provide the connectivity and related services needed to establish and maintain end-to-end IP

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[87] The proposed term "broadband Internet service providers" would not include providers that only offer information content, applications, services, or devices accessed over or connected to broadband Internet access services, such as social network providers, which would not be covered by the reporting obligations proposed in the *NPRM*.

[88] *See* GigaOM: VoIP Has Serious Problems, http://gigaom.com/2005/03/06/voip-has-serious-problems/ (last visited May 9, 2011).

[89] Facilities-based broadband ISPs own and/or operate the broadband communications infrastructure required to deliver broadband service to their customers. In contrast, non-facilities based broadband ISPs do not own nor operate the broadband communications infrastructure used to deliver broadband service to their customers.

communications among independently-operated networks.[90] There are a wide variety of ISP business models and architectures. We identify two broad categories that collectively constitute broadband ISPs for the purposes of this proceeding and seek comment on whether there are other categories of ISPs the Commission should consider for outage reporting purposes.

34. A broadband Internet access service provider aggregates end-user communications, usually within a specific geographic region (*e.g.,* typically providing the connection of traffic flow between end users within the vicinity of a city to a broadband backbone ISP). For purposes of this proceeding, we propose to define a "broadband Internet access service provider" as a provider of as a provider of mass-market retail service by wire or radio that is able to support interconnected VoIP service as defined in our E11 rules. This definition would reflect that ISPs do not necessarily provide the interconnected VoIP service that rides over their networks and, accordingly, they may be unaware whether their network is being used to support such services and their 9-1-1 functions. Alternatively, we could define a "broadband Internet access service provider" as a provider of mass-market retail service by wire or radio that provides the capability to transmit data to and receive data from all or substantially all Internet endpoints, including any capabilities that are incidental to and enable the operation of the communications service, but excluding dial-up Internet access service. This term would also encompass providers of any service that the Commission finds to be providing a functional equivalent of the service described in the previous sentence.[91] We seek comment on this alternative approach and any other alternative definitions.

35. For purposes of outage reporting, we propose to define a "broadband backbone ISP"[92] to be one that provides long-haul transmission for one or more broadband Internet access service providers (*e.g*., typically connecting traffic among major cities).[93] We seek comment on this proposed definition.

36. For the purposes of this *NPRM*, we distinguish between broadband Internet access service providers and broadband backbone ISPs because of the different roles that they perform. Often a single organization may fulfill both types of broadband ISP roles, providing roles as broadband Internet access service provider and as broadband backbone ISP.[94] We seek comment on the definitions that we use for purposes of outage reporting.

1. Broadband Internet Access Service Providers

37. Broadband Internet access service providers aggregate end-user communications, usually within a specific geographic region. Examples of broadband Internet access service providers are local exchange carriers that provide end-user traffic access to the Internet, and cable system operators that aggregate the traffic of residential end users using cable modem technology and offer access to the Internet.

38. Broadband Internet access service providers are the conduit for delivering broadband services to the American public and business community. For example, Comcast, a broadband Internet access service provider, is also the third largest residential telephone service provider in the United States,

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[90] Broadband ISPs may also directly, or indirectly, provide end users with applications such as electronic mail. The provision of such application is not proposed to be subject to outage reporting requirements.

[91] *Open Internet Order,* 25 FCC Rcd at 17932.

[92] Broadband backbone ISPs are sometimes referred to as Network Service Providers. (NSPs).

[93] In the *Open Internet Order*, the Commission stated that broadband Internet access service does not include, *inter alia*, Internet backbone services. *Open Internet Order,* 25 FCC Rcd at 17933 ¶47. Therefore, we believe it is necessary to define the term here for purposes of outage reporting.

[94] AT&T and Verizon are examples of both broadband access and backbone ISPs.

exceeded only by AT&T and Verizon.[95] When outages occur that severely degrade the delivery of the broadband services, end users are negatively affected, which can include 9-1-1 services.[96] Without a reporting requirement, however, it is nearly impossible to determine the extent, the effect, and the consequences of broadband outages. As demonstrated by a recent September 2010 XO Communications Internet outage, both business and residential end users can be severely impacted by an outage.[97]

39. Broadband Internet access service providers continue to show significant growth in subscribership. Between 1999 and 2009, the number of fixed-location business and residential connections grew at an annual compound rate of 42 percent, increasing from 2 million to 81 million connections.[98] This growth in subscribership reflects the American public's ever increasing reliance on broadband Internet access service to conduct important daily communications, such as online banking, interfacing with local, state, and federal governments, business-to-business transactions, and many other forms of electronic commerce.

40. Accordingly, we propose to extend the outage reporting requirements in Part 4 of our rules to broadband Internet access service providers. Consistent with the current definition of "outage" in Part 4,[99] which places emphasis on a "significant degradation" of communications, we propose that an outage in the context of broadband Internet access service provider be defined as "the loss to the end user of generally-useful availability and Internet connectivity."[100]

41. Should we measure "generally-useful availability and connectivity" of broadband Internet service as it relates to a broadband Internet access service provider as the operational state in which the transmission from the end user to the broadband ISP Point of Presence (PoP)[101] is operating as designed for normal use, the logical functions and relay systems required from ISPs are operating as designed for normal use, and the end user is not prevented by the broadband Internet access service provider from

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[95] *See* Comcast Now Third Largest Residential Phone Services Provider in the U.S., https://www.comcast.com/about/pressrelease/pressreleasedetail.ashx?PRID=844 (last visited March 1, 2011).

[96] Such a situation occurred when Frontier, a broadband Internet access service provider headquartered in Stamford, Connecticut, suffered an outage in February 2000 that disrupted broadband services to end users for one hour. *See* February 23, 2000 Posting of Liz Pavek to http://www.greenspun.com/bboard/q-and-a-fetch-msg.tcl?msg_id=002dcz (last visited March 1, 2011).

[97] *See* TechNewsDaily, Internet Outage Halts Service to Various Businesses, http://www.technewsdaily.com/internet-outage-halts-service-to-various-businesses-1242/ (last visited March 1, 2011).

[98] *See Internet Access Services: Status as of December 31, 2009*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission, at Figure 4 (Dec. 2010), http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db1208/DOC-303405A1.pdf (last visited May 11, 2011).

[99] 47 C.F.R. § 4.5.

[100] We use the term "generally-useful availability and Internet connectivity" here to capture the more complex interactions that occur among Internet networks and servers. The phrase "generally-useful availability" is used to mean both that the transmission from the end user to the Local Access Provider (*e.g.,* DSL provider) is operating as designed for normal use, and that the logical functions and relay systems required from either the Local Access Provider or the regional Internet Service Provider are also operating as designed for normal use. By "generally-useful Internet connectivity," we mean the end user is not significantly prevented by a Local Access Provider, Internet Service Provider, or Internet Exchange Point failure from establishing Internet connectivity with any destination device on the global Internet that has an assigned Internet Protocol address. Combining these two related concepts, we shall refer to the user's normal expectations for Internet service as having "generally-useful availability and Internet connectivity." "Degradation" is sometimes used to refer to excessive packet loss or a general slowing down of one or more (if interconnected) communications networks, and usually affects the extent to which the connectivity of telecommunications is generally useful.

[101] An Internet Point of Presence (PoP) is the facility at which a regional or backbone ISP connects to its customers.

establishing communications with any destination device on the global Internet that has an assigned Internet Protocol address?

42. We seek comment on whether for broadband Internet access service providers the "loss of generally-useful availability and connectivity" can be measured using the metrics defined by the IETF, such as packet loss,[102] round-trip latency[103], or jitter[104] from the source to the destination host? Are there additional metrics that should be used to trigger outage reporting? We recognize that there are differences in the various architectures of cable, wireline, wireless, and satellite systems employed by broadband Internet access service providers that may affect the delivery of Internet services. Therefore, we seek comment on the applicability of the IETF metrics and their values for these types of service providers. Based on an examination of commercial practices, and considering the apparent lack of standardized values for the metrics presented here, we believe that the appropriate values should be packet loss of one percent or more, round-trip latency of 100 ms or more, or jitter of 4 ms or more from the source to the destination host in order to trigger outage reporting. Are these values appropriate for all types of broadband Internet access service providers? Are there more appropriate values? What are they and why are they better? How should the number of potentially affected users be counted for broadband Internet access service providers? For non-mobile users, can the number of IP addresses be used as a direct estimate of the number of potentially affected non-mobile users? In the cases where Dynamic Host Configuration Protocol (DHCP)[105] is used to assign IP addresses by Internet access service providers, how does its use affect the estimate of the number of potentially affected users given the dynamic re-use of IP addresses? Should there be a multiplier introduced to improve the estimate? For wireless service providers, the current rules require the service provider to estimate the simultaneous call capacity lost and then multiply the result by a concentration ratio of eight (to convert the number of users affected to the number of potentially affected users). Should a similar construct be used for non-mobile broadband access users? Is there a direct estimate of the number of potentially affected users that would be preferable? We also understand that performance degradations on control elements in ISP networks (*e.g.*, ISP-operated DNS servers and DHCP servers) can result in Internet service that is neither generally useful nor available to end users. We seek comment on what thresholds should be set to measure outages of this nature. We seek comment on whether these outage definitions are appropriate, and how these user-centric metrics might be aggregated into a more meaningful metric that can be the basis for reporting.

43. Should we require a broadband Internet access service provider to submit reports in cases similar to the current reporting requirements for voice service providers?[106] We seek comment on requiring a report when the provider has experienced an outage or service degradation for at least 30 minutes: (a) on any major facility (*e.g.*, authoritative DNS server, DHCP server, HSS) that it owns, operates, leases, or otherwise utilizes; (b) potentially affecting generally-useful availability and connectivity of at least 900,000 user minutes (*e.g.*, average packet loss of greater than one percent for 30,000 users for 30 minutes); or (c) that affects any special offices and facilities, including major military installations, key government facilities, nuclear power plants, airports, and Public Safety Answering Points (PSAPs). Are there other special facilities for which outage reporting would be appropriate? Should a different standard apply to broadband access providers that provide service to end users with wireless applications? How should potentially affected mobile users be counted?

44. More generally, we request comments on: the costs, burdens and benefits of our proposed

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[102] *See supra* note 71.

[103] *See supra* note 72.

[104] *See supra* note 73.

[105] *See* DHCP – Dynamic Host Control Protocol, http://compnetworking.about.com/cs/protocolsdhcp/g/bldef_dhcp.htm (last visited March 1, 2011).

[106] 47 C.F.R. § 4.5 (a)-(d).

outage reporting requirements for broadband Internet access service providers, and whether the proposed rules would promote the reliability, resiliency and security of 9-1-1 and other communications; whether there are other performance objectives that we should address; and whether better alternatives exist, including more narrowly tailored rules, that would maximize the potential benefits to society or would accomplish the proceeding's objectives in a less costly, less burdensome, and/or more effective manner.

2. Broadband Backbone ISPs

45. A broadband backbone ISP interconnects a broadband Internet access service provider to other broadband Internet access service providers. Stated differently, the broadband backbone ISP provides long-haul transmission for the broadband Internet access service providers. Broadband backbone ISPs also connect to each other through network access points (NAPs)[107] or private peering arrangements. Broadband backbone ISPs route all traffic incoming from broadband Internet access service providers and provide the infrastructure needed for Internet connectivity between the broadband Internet access service providers. Such backbone ISPs are sometimes also referred to as "transit providers."

46. Based on the role of the broadband backbone ISP as interconnectors of other ISPs, we believe it possible that an outage suffered by a broadband backbone ISP could cause greater impact, as measured by the number of affected users, than a similar outage experienced by an access ISP. Such outages could severely impact the ability of users to reach 9-1-1 during an emergency. We therefore propose to require that broadband backbone ISPs report outages whenever the broadband backbone ISP experiences an outage or service degradation affecting other ISPs or end users. Reporting of these types of service disruptions would serve as a foundation for the development of network best practices to guard against future disruptions of this magnitude that have the potential to compromise public safety and have a widespread negative effect on consumers.

47. We seek comment on what threshold of disruption should constitute a reportable broadband backbone ISP service outage. Consistent with the current definition of "outage" in Part 4 of our rules that places emphasis on a "significant degradation" of communications, we propose that an outage in the context of a broadband backbone ISP be defined as the loss of "generally-useful availability and Internet connectivity."

48. Should we define "generally-useful availability and Internet connectivity"[108] of broadband Internet service as it relates to a broadband backbone ISP as: (a) the operational state in which the transmission between ISP PoPs is operating as designed for normal use; (b) the logical functions and relay systems required from ISPs are operating as designed for normal use; and/or (c) the connected access ISP networks are not prevented from establishing communications with any destination device on the global Internet that has an assigned Internet Protocol address. Can the "loss of generally-useful availability and connectivity" for broadband backbone ISPs be measured using the metrics defined by the IETF, including packet loss,[109] round-trip latency,[110] or jitter[111] as measured from source to destination PoP? Are there additional metrics that should be used to trigger outage reporting? We seek comment on these metrics and the values in this proposal. Based on an examination of commercial practices, and considering the apparent lack of standardized values for the metrics presented here, we believe that the

[107] Within the United States, a NAP is one among several key Internet interconnection points that serve to connect U.S. Internet access providers.

[108] *See supra* ¶ 49 for a definition of this term.

[109] *See supra* note 71.

[110] *See supra* note 72.

[111] *See supra* note 73.

appropriate values should be packet loss of one percent or more, round-trip latency of 100 ms or more, or jitter of 4 ms or more as measured from source to destination PoP in order to trigger outage reporting. Are these values appropriate for all types of broadband backbone ISPs? Are there more appropriate values? What are they and why are they better?

49. Due to the Nation's ever-growing dependence on ISPs to deliver critical IP communication services, we seek comment on requiring a broadband backbone ISP to submit outage reports when it experiences an outage or service degradation for at least 30 minutes: (a) on any major facility (*e.g.*, PoP, Exchange Point, core router, root name server, ISP-operated DNS server, or DHCP server) that it owns, operates, leases, or otherwise utilizes; (b) potentially affecting generally-useful availability and connectivity for any Internet PoP-to-Internet PoP (PoP-to-PoP) pair for which they lease, own or operate at least one of the PoPs where the "loss of generally useful availability and connectivity" is defined as: (1) an average packet loss of one percent or greater; (2) average round-trip delay of 100 ms or greater; or (3) average jitter of 4 ms or greater with measurements taken in each of at least six consecutive five-minute intervals as measured from source to destination PoP. We also seek comment on the proposed packet loss, latency, and jitter threshold values. Should the failure of routers, network servers, or some other type of communications equipment be reportable? For example, should failure of a PoP, core router, root name server, or authoritative DNS server be included in the list of such equipment?

50. More generally, we request comments on: the costs, burdens and benefits of our proposed outage reporting requirements for broadband backbone Internet service providers, and whether the proposed rules would promote the reliability, resiliency and security of 9-1-1 and other communications; whether there are other performance objectives that we should address; and whether better alternatives exist, including more narrowly tailored rules, that would maximize the potential benefits to society or would accomplish the proceeding's objectives in a less costly, less burdensome, and/or more effective manner.

3. Examples of Proposed Broadband ISP Outage Reporting Applications

51. To illustrate the types of ISP outages to which we propose extending our Part 4 rules, we provide below several scenarios of failures or degradations in the performance of a broadband ISP's network that would seem likely to result in a reportable Internet connectivity service outage under the criteria we are proposing. We emphasize that each failure does not by itself necessarily constitute an outage. Rather, whether an outage has occurred is determined and measured by the inability of a large number of potentially-affected end users to establish and maintain generally-useful Internet availability or connectivity service over a period of time. We recognize that the basic features of the Internet Protocol and the fault-tolerant designs of many networks will prevent many failures from having significant, prolonged effects on significant numbers of end users and, thus, from resulting in reportable outages. The scenarios below are the types of exceptional failures that we believe would become manifest to end users at a level sufficient to trigger an outage report. We ask parties to comment on whether the contemplated thresholds would be inconsistent with end-user expectations, or would result in a level of reporting not conducive to useful analysis. To the extent that the proposed thresholds are inconsistent with end-user expectations or would result in a level of reporting not conducive to useful analysis, how should they be improved? Should these examples of outages unique to ISPs trigger the reporting requirements being proposed?

> *Scenario No. 1.* A broadband Internet access service provider experiences an outage of service of a regional PoP potentially affecting 30,000 subscribers for 30 minutes aggregated across all access arrangements (*e.g.*, DSL access, cable modem access, *etc.*).[112]

[112] By "aggregated across all access arrangements" we intend, for example, that a mix of 10,000 Cable Modem subscribers, 10,000 DSL subscribers, and 1,000 dial-in ports serving potentially 10,000 dial-up subscribers would constitute 30,000 subscribers.

Scenario No. 2. A broadband backbone ISP experiences an outage of service of any PoP for 30 minutes.

52. We note that, because of differing network topologies, some large PoPs have a number of transmission links to two or more other large cities, but smaller PoPs, such as an Internet PoP in a small city, may have only a single transmission link back to a large city PoP. Thus, a PoP in a small city is more subject to isolation, meaning that it is likely to be cutoff from the Internet more easily. If the single link is lost, regional IP-based communications may be available to end users connected at the small city PoP, but global IP-based communications will likely not be available to the end user or will be noticeably degraded.

Scenario No. 3. A broadband ISP experiences the isolation of a PoP for at least 30 minutes. Such an outage could result, for example, from the loss of a transmission link from a hub PoP to a spoke PoP.[113]

53. Thousands of separately administered networks make up the global Internet. Those autonomous systems[114] that handle transit traffic (*e.g.*, a broadband backbone ISP) or that have multiple connections to the rest of Internet (*e.g.*, a broadband Internet access service provider) are interconnected by inter-ISP links.[115] Any pair of autonomous systems (*e.g.*, two broadband backbone ISPs) may be interconnected at multiple points, so that the failure of any one inter-ISP link will cause IP packets to be re-routed dynamically. Therefore, the link failure would not necessarily result in the loss of IP-based communications interconnectivity. Nevertheless, we believe that the sustained loss or misconfiguration of a major inter-ISP link is likely to manifest itself as degradation of end-user IP telecommunications. To this end, we seek comment on whether the following scenario should require reporting.

Scenario No. 4. An outage of at least 30 minutes of an inter-ISP link with a data rate greater than 1 Gbps (*e.g.,* a pair of OC-12 optical fiber carriers, an OC-48 optical fiber carrier, or the inter-domain router servicing the link).

54. An IP telecommunications Exchange Point is a facility where multiple ISPs connect to exchange IP packets and network routing information. By providing one circuit to an Exchange Point, an ISP can obtain connectivity with multiple other ISPs, which can be especially efficient for exchanging relatively low volumes of traffic. Exchange Points are typically built using legacy network technologies (*e.g.*, Asynchronous Transfer Mode, Ethernet) and can be particularly important to regional ISPs and for regional IP-based communications.[116] We believe that the sustained outage of equipment (*e.g.*, routers) within an Exchange Point is likely to manifest itself as degradation in the end users' IP-based

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[113] In our view, "loss of a transmission" includes not only complete transmission losses due, for example, to a cut in a fiber optic cable or to a catastrophic failure of a router, but also encompasses a high packet loss rate on a link experiencing degraded operation. Because IP-based communication does not provide a totally reliable communications function, some level of packet loss is regarded as acceptable. However, it seems generally accepted that high levels of packet loss render IP-based communications unusable (*e.g.,* packet loss in the range of five to 25 percent, depending on the requirements of the application). *See*, *e.g.,* Les Cottrell, Warren Matthews & Connie Log, "Tutorial on Internet Monitoring & PingER at SLAC," http://www.slac.stanford.edu/comp/net/wan-mon/tutorial.html (last visited March 1, 2011).

[114] An autonomous system is a network or collection of networks with a single, coherent internal routing plan. Usually, it has a single owner and administrator (*e.g.*, an ISP or enterprise network).

[115] Autonomous systems typically interconnect and share network routing information externally using an inter-domain routing protocol such as the Border Gateway Protocol. We define an "inter-ISP link" as a transmission link between (and including) the inter-domain routers connecting ISPs.

[116] *See generally* North American Exchange Points, http://www.ep.net/html/naps_na.html (last visited March 1, 2011).

communications, and we seek comment on the following scenario.

> *Scenario No. 5.* A router within an Exchange Point is out of operation for 30 minutes or more, or experiences a one-percent or greater packet loss for 30 minutes or more.[117]

C. Application of Part 4 Rules to Service Provided Using New Wireless Technologies

55. In the *2004 Part 4 Report and Order*, the Commission extended its outage reporting requirements beyond wireline providers to include wireless providers. In that decision, the Commission enumerated several types of licensees providing wireless service that would be covered by the Part 4 outage reporting obligations.[118] Since that time, licensing in additional spectrum bands, *e.g.*, Advanced Wireless Services (AWS) and 700 MHz licensing, has become available for wireless services. The *2004 Part 4 Report and Order* suggests that the Commission intended to extend the scope of outage reporting to include all non-wireline providers, including new technologies developed after the adoption of the *2004 Part 4 Report and Order*.[119] We seek comment on whether we should amend Section 4.3(f) to

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[117] We assume that the very existence of an Exchange Point suggests a traffic volume for upwards of 30,000 potential end users. We anticipate that, for example, the failure of an Exchange Point serving regional ISPs would degrade the regional connectivity of the end users served by those ISPs. If the aggregated number of end users for all regional ISPs exchanging traffic at an Exchange Point were less than 30,000 potential end users, a failure or degradation lasting more than 30 minutes might still reach the 900,000 user-minute threshold.

[118] Those services are reflected in the Section 4.3(f) of the Commission's rules, which defines "wireless service providers" for purposes of Part 4 to include:

> . . . Commercial Mobile Radio Service communications providers that use cellular architecture and CMRS paging providers. In particular, they include Cellular Radio Telephone Service (part 22 of the Commission's Rules) providers; Personal Communications Service (PCS) (part 24) providers; those Special Mobile Radio Service (part 90) providers that meet the definition of "covered CMRS" providers pursuant to §§ 20.18(a), 52.21, and 52.31 of the Commission's rules, those private paging (part 90) providers that are treated as CMRS providers (*see* of this chapter); and narrowband PCS providers (part 24) of this chapter. Also included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

[119] In the order extending the scope of the outage reporting rules beyond wireline carriers and establishing the current outage rules, the Commission stated that it would "adopt [its proposal in the NPRM] to extend mandatory outage reporting to non-wireline communications providers …." *Part 4 Report and Order,* 19 FCC Rcd 16830, 16855 ¶ 46 (2004). In the same proceeding's *NPRM,* the Commission proposed "to extend our disruption reporting requirements to communications providers who are not wireline carriers," and further explained that "[b]y the term 'communications provider' we mean an entity that provides two-way voice and/or data communications, and/or paging service, by radio, wire, cable, satellite, and/or lightguide for a fee to one or more unaffiliated entities." New Part 4 of the Commission's Rules Concerning Disruptions to Communications*, Notice of Proposed Rulemaking*, 19 FCC Rcd 3373, 3375¶1 (2004) (*Part 4 NPRM*). More specifically, in that proceeding's *NPRM* concerning "Application to Wireless Communications," the Commission stated that "we propose to extend our outage reporting requirements to wireless providers." *Id.* at 3381-82 ¶14. The Commission further explained:

> From this point forward, we use the phrase 'wireless services' to refer to communications that are provided using cellular architecture in the Cellular Radio Telephone Service ('CRTS') (Part 22 of the Commission's Rules); Personal Communications Service ("PCS") (Part 24); and enhanced Special Mobile Radio Service ('SMRS') (Part 90) (such as that provided by NEXTEL). It is also our intention to include Short Message Service ('SMS') communications, which consist of short text messages (typically 20 octets or less), as well as CMRS paging services (*see* 47 C.F.R. §§ 20.9(a) (1), (6), 22.99, 22.507(c), and 90.7) and narrowband PCS (Part 24), as wireless services. Entities that provide wireless services will be referred to as 'wireless service providers.'

(continued….)

clarify and reflect this meaning. For instance, should the rule be amended to state explicitly that the rule also applies to new services using spectrum bands or new wireless technologies that come into being after the adoption of the rule? With respect to AWS and 700 MHz licensees, are the current Part 4 rules adequate to cover outage reporting obligations by these providers (*e.g.*, reporting thresholds, and nature of information to be submitted)? Should the rules be amended so as to exclude AWS and 700 MHz providers from reporting requirements because the services that they provide have not reached sufficiently high levels such that outage reporting would be desirable? For AWS and 700 MHz providers, what are their respective usage levels such that an outage would have a significantly large impact on telecommunications networks and users so as to warrant collecting such data?

IV. MANDATORY OR VOLUNTARY NATURE OF REPORTING, AND OTHER REGULATORY ALTERNATIVES

56. For the Commission to obtain as complete a picture as possible of service outages from interconnected VoIP service providers and broadband ISPs, and to allow the Commission to assist in facilitating a resolution of outages and preventing future outages, we propose that the outage reporting described herein be mandatory, as it is today for services covered under our Part 4 rules. Because of the importance of the reliability and resiliency of broadband communications for the Nation's 9-1-1 system and overall emergency response, we believe mandatory reporting is appropriate. We note that several commenters to the *PSHSB PN* recommend that, if the Commission extends its outage reporting rules, then the reporting should be entirely voluntary,[120] with some arguing that existing voluntary efforts by providers and their ongoing involvement in public-private coordination efforts are sufficient to minimize risks to the communications infrastructure.[121]

57. Other commenters suggest we follow the voluntary Disaster Information Reporting System (DIRS) as a model.[122] There are significant differences, however, between the purposes of DIRS and an outage reporting system. DIRS is a reporting system for use in disasters where it is important to have maximum flexibility in the types of information requested. DIRS is rarely activated, and the urgent events that lead to its activation tend to motivate communications providers to cooperate in providing the information that is needed to support the Federal response. Outage reporting, on the other hand, is a routine process that has met with significant resistance in the past. We note that a voluntary outage reporting trial was attempted, without success, prior to the imposition of our original Part 4 rules.[123] As the Commission observed in 2004, previous provider participation in voluntary network-outage reporting was "spotty," the "quality of information obtained was very poor," and there was "no persuasive evidence in the record that … *all* covered communications providers would voluntarily file accurate and complete

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Id. at 3381 ¶14 n.30.

[120] Comments of Qwest Communications, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 2, 2010, at 11("Qwest Comments"); Comments of Alliance for Telecommunications Industry Solutions, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 2, 2010, at 1, 5 ("ATIS Comments"); MetroPCS Comments, filed Aug. 2, 2010, at 7; NCTA Comments, filed Aug. 2, 2010, at 12.

[121] *See* Verizon Comments, filed Aug. 2, 2010, at 3-6, 9-11; Qwest Comments, filed Aug. 2, 2010, at 3-8; AT&T Comments, filed Aug. 2, 2010, at 5-6; US Telecom Comments, filed Aug. 2, 2010, at 2-4; NCTA Comments, filed Aug. 2, 2010, at 4; MetroPCS Comments, filed Aug. 2, 2010, at 4.

[122] *See* Reply Comments of T-Mobile USA, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 16, 2010, at 6-7 ("T-Mobile Reply Comments"); Qwest Comments, filed Aug. 2, 2010, at 11; ATIS Comments, filed Aug. 2, 2010, at 7.

[123] *2004 Part 4 Report and Order,* 19 FCC Rcd at 16840. Discussing its own experience with voluntary reporting of communications outages, the New York Department of Public Service states that "despite commitments to participate, the level of real-time and consistent reporting by non-PSTN carriers has been a disappointment." Comments of New York Department of Public Service, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, filed Aug. 2, 2010, at 2.

outage reports for the foreseeable future or that mandatory reporting is not essential to the development, refinement, and validation of best practices."[124] Hence, mandatory reporting was adopted to ensure timely, accurate reporting.

58. We note that Japan requires outage reporting from broadband communications providers.[125] In addition, European Union countries are considering mandatory outage reporting requirements.[126] We seek comment on what role the Japanese outage reporting requirements played in restoring communications during the recent series of events. We seek comment also on current proposals in other countries to require outage reporting by broadband communications providers and, specifically, how those proposals are tailored to ensure valuable data is collected while imposing the least amount of burden on reporting providers.

59. We seek comment on whether mandatory reporting is necessary to obtain a comprehensive view of outages experienced by customers that may impact 9-1-1 and other services. Alternatively, if we were to adopt a voluntary reporting scheme, how could the Commission be confident that it is not missing important information? What other regulatory alternatives should the Commission consider for interconnected VoIP service provider and broadband ISP outage reporting? What aspects of the information that providers share, as part of their voluntary ongoing public-private coordination, should we adopt?

60. Finally, we request comments on: the costs, burdens and benefits of the proposed mandatory reporting requirement; whether the requirement would promote the reliability, resiliency and security of interconnected VoIP, broadband Internet access, and broadband backbone Internet services and the 9-1-1 capabilities that depend on such services; whether we could more narrowly tailor the requirement or otherwise pursue an alternative that would maximize the potential benefits to society or would accomplish the proceeding's objectives in a less costly, less burdensome, and/or more effective manner. Service providers, such as those serving rural areas, can face different challenges depending on the topography and demographics of the communities that they serve. How should we consider these differences?

V. REPORTING PROCESS

61. Under our Part 4 rules, communications providers are required to submit a Notification within two hours of discovering a reportable outage.[127] An Initial Report is due within 72 hours after discovering the outage, and a Final Report is due within 30 days after discovering the outage.[128] Final Reports must be submitted by a person authorized by the provider to submit such reports to the

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[124] *2004 Part 4 Report and Order*, 19 FCC Rcd at 16851-52.

[125] According to Japan's Telecommunications Carriers Law Section 2, application providers have an obligation to report when there have been service disrupted by outages impacting 30,000 people or more for two hours or more. *See* http://www.soumu.go.jp/menu_seisaku/ictseisaku/net_anzen/jiko/judai.html (last visited May 10, 2011).

[126] The European Union recently adopted a Directive that includes the requirement: "Member States shall ensure that undertakings providing public communications networks or publicly available electronic communications services notify the competent national regulatory authority of a breach of security or loss of integrity that has had a significant impact on the operation of networks or services." Directive 2009/140/EC of the European Parliament and of the Council, chapter IIIa, art. 13(a)(3) (Nov. 25, 2009)(Directive). *See* http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0037:01:EN:HTML (last visited April 15, 2011).

[127] *See* 47 C.F.R. § 4.9. Pursuant to 47 C.F.R. § 4.11, a Notification must include: "The name of the reporting entity; the date and time of onset of the outage; a brief description of the problem; service effects; the geographic area affected by the outage; and a contact name and contact telephone number . . . ."

[128] *See* 47 C.F.R. § 4.9. Pursuant to 47 C.F.R. § 4.11, the Initial Report must "contain all pertinent information then available on the outage and shall be submitted in good faith." *Id*. A Final Report must "contain all pertinent information on the outage, including any information that was not contained in, or that has changed from that provided in, the Initial report." *Id*.

Commission and to bind the provider legally to the truth, completeness, and accuracy of the information contained in the report.[129] The Final Communications Outage Report must contain all potentially significant information known about the outage after a good faith effort has been made to obtain it, including any information that was not contained in, or that has changed from that provided in, the Initial Report. We propose to follow the same reporting process for the reporting of outages experienced by interconnected VoIP service providers and broadband ISPs. We seek comment on this proposal.

62. We currently provide an electronic reporting template to facilitate outage reporting by those currently subject to our Part 4 rules.[130] We believe that this approach to collecting data has ensured that the Commission learns of major outages in a timely fashion and, at the same time, minimizes the amount of time and effort required to comply with the reporting requirements. Accordingly, we propose to utilize a very similar electronic reporting template to collect outage reports from interconnected VoIP service providers and broadband ISPs. We seek comment on this proposal.

63. We believe this process is reasonable in light of the significant benefits conferred by the ability to analyze and address network outages. In addition, we believe that interconnected VoIP service providers and broadband ISPs are currently collecting in the ordinary course of their business much of the information, and perhaps even a broader range of information, than we propose be reported.[131] Therefore, we believe that, in the usual case, complying with our proposed reporting requirements would not result in an undue administrative burden. We seek comment on the reasonableness of the reporting process proposed herein, and we request comment on relevant types of outage information already being collected by interconnected VoIP service providers and broadband ISPs so that we could align our metrics with what is already available to them.

64. Further, we seek comment on whether collecting and reporting as proposed would be no more burdensome for interconnected VoIP service providers and broadband ISPs than current Part 4 reporting requirements are for traditional providers. Is the burden greater on smaller VoIP service providers and smaller broadband ISPs? If so, to what degree? Are there alternative ways to accomplish the aims of this proceeding in a less burdensome manner? For example, what alternatives processes, if any, could be followed which would enable the Commission to collect the types of data specified in this proceeding without requiring a direct interface between the Commission and VoIP service providers and broadband ISPs? Analysis of outage reports by both Commission staff and reporting providers has led to a significant reduction in the frequency and scope of outages on the providers' networks. Is the burden of reporting outweighed by the benefits from the ability to analyze reported outages to help prevent future outages and assist better responses to actual outages?

65. More generally, we request comments on: the costs, burdens and benefits of adopting the proposed reporting process; whether the process would promote the reliability, resiliency and security of 9-1-1 and other services provided via broadband; whether we could more narrowly tailor the proposed process, or could otherwise pursue an alternative reporting process that would maximize the potential

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[129] *See* 47 C.F.R. § 4.11.

[130] Reports are submitted electronically, using Commission-approved Web-based outage reporting templates. If there are technical impediments to using the Web-based system, then the reports may be submitted to the Commission by e-mail, FAX, or courier; submissions made by these alternative methods shall contain all the required information. *See id.* This requirement applies to all communications providers covered by the requirements of Part 4. Since we do not propose to change this rule, it would also apply to providers of interconnected VoIP and broadband ISPs if they become subject to Part 4 reporting requirements. *See* http://www.fcc.gov/pshs/outage/nors_manual.pdf (last visited May 11, 2011).

[131] In the *2004 Part 4 Order and NPRM*, we found that most of the providers that would be subject to the reporting requirements and process adopted therein were collecting much of the same information that would be required to be reported under Part 4. *See 2004 Part 4 Order and NPRM,* 19 FCC Rcd at 16912-3 ¶ 166-69; *see also 1992 Part 4 Report and Order*, 7 FCC Rcd at 2013 ¶17 (1992).

benefits to society or would accomplish the proceeding's objectives in a less costly, less burdensome, and/or more effective manner.

VI. SHARING OF INFORMATION AND CONFIDENTIALITY

66. Data collected pursuant to the NORS is presumptively confidential.[132] Currently, to the extent that the Commission shares the outage information it receives, sharing is done on a presumptively confidential basis pursuant to the procedures in Part 0 of our rules for sharing information not generally available for inspection.[133] We seek comment on whether the outage information collected from broadband ISPs and interconnected VoIP service providers should also be treated as presumptively confidential. We seek comment on publicly reporting aggregated information across companies, *e.g.*, total number of incidents by root cause categories. Also, we seek comment on whether the Commission should share the information with other Federal agencies on a presumptively confidential basis.

VII. LEGAL AUTHORITY

67. We believe the Commission has authority under the Communications Act to promulgate the reporting rules proposed here. In section 615a-1 of the Communications Act, Congress imposed a "duty" on "each IP-enabled voice service [interconnected VoIP] provider to provide 9-1-1 service and enhanced 9-1-1 service to its subscribers in accordance with the requirements of the Federal Communications Commission."[134] The Commission has express statutory authority to adopt rules implementing that requirement.[135] We seek comment on this interpretation and the analyses below.

68. In addition, we believe that the Commission has authority to ensure both that interconnected VoIP providers fulfill their duty to provide 9-1-1 services and to address obstacles, such as failures in underlying communications networks, to their doing so. Under the definition of ancillary authority recently adopted by the U.S. Court of Appeals for the District of Columbia Circuit, the Commission may exercise ancillary authority when "(1) the Commission's general jurisdictional grant under Title I [of the Communications Act] covers the regulated subject and (2) the regulations are reasonably ancillary to the Commission's effective performance of its statutorily mandated responsibilities."[136] Both prongs are met here with respect to interconnected VoIP providers. The provision of interconnected VoIP is "communication by wire or radio" within the general jurisdictional grant of section 2 of the Act.[137] Second, as explained above, collecting outage information from interconnected VoIP providers as proposed in this Notice is "reasonably ancillary" to ensuring that interconnected VoIP providers are able to satisfy their 9-1-1 obligations under the Act as implemented in our Part 9 rules, and to enable the Commission to assist in improving the reliability of these mandated services.[138] We seek comment on this analysis.

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[132] 47 C.F.R. § 4.2 provides that "[r]eports filed under this part will be presumed to be confidential. Public access to reports filed under this part may be sought only pursuant to the procedures set forth in 47 CFR § 0.461." *See also 2004 Part 4 Report and Order,* 19 FCC Rcd at 16856.

[133] *See* 47 C.F.R. § 0.442. *See also* 47 U.S.C. § 154(i) (authorizing Commission to "perform any and all acts, make such rules and regulations, and issue such orders, not inconsistent with th[e Communications] Act, as may be necessary in the execution of its functions").

[134] 47 U.S.C. § 615a-1(a). The term "IP-enabled voice service" means "interconnected VoIP service" as defined in section 9.3 of our rules. *Id.* § 615b(8).

[135] 47 U.S.C. 615a-1(c).

[136] *Comcast Corp. v. FCC*, 600 F.3d 642, 646 (D.C. Cir. 2010) (quoting *Am. Lib. Ass'n v. FCC*, 406 F.3d 689, 691-92 (D.C. Cir. 2005)).

[137] 47 U.S.C. § 152; *see also Comcast,* 600 F.3d at 646-47; *IP-Enabled Services*, Report and Order, 24 FCC Rcd 6039, 6045, ¶ 10 (2009).

[138] *See supra* note 15 and accompanying text.

69. Likewise, we believe that the Commission has authority, under the test stated by the D.C. Circuit, to collect outage information from broadband Internet service providers. First, as discussed earlier, we believe that broadband services fall within the Commission's general jurisdictional grant as "communication by wire or radio."[139] Second, the network outage reporting proposals for broadband Internet service providers are reasonably ancillary to ensuring that interconnected VoIP providers are able to satisfy their 9-1-1 duties under the Act. This is because Interconnected VoIP services by definition[140] depend on broadband networks. If a broadband network fails, interconnected VoIP traffic – including calls to 9-1-1 – cannot travel over that network. A broadband failure would potentially prevent interconnected VoIP providers from satisfying their duty under the Act and our rules to provide 9-1-1 services. For these reasons, and as authorized by Section 4(i) of the Communications Act of 1934, as amended, 47 U.S.C. § 154(i), we believe we have ancillary authority to collect outage information from broadband Internet service providers. We seek comment on this analysis.

70. We also ask commenters to address other potentially relevant sources of authority. For example, for wireless broadband ISPs or other broadband ISPs that use significant wireless components, do Title III provisions such as section 307(a),[141] 309(j)(3),[142]or 316(a)(1)[143] provide authority for the reporting obligations? Section 4(k) of the Act requires the Commission to prepare an annual report to Congress containing "such information and data collected by the Commission as may be considered of value in the determination of questions connected with the regulation of . . . communication" and "specific recommendations to Congress as to additional legislation."[144] Similarly, Section 4(o) directs the Commission to study of all phases of a problem for the purpose of effective communications in connection with safety of life or property.[145] Could the Commission adopt the outage reporting

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[139] *E.g., Wireline Broadband ISP Order and NPRM,* 20 FCC Rcd at 14914, ¶ 110.

[140] 47 C.F.R. § 9.3 defines an interconnected Voice over Internet Protocol (VoIP) service as a service that: (1) enables real-time, two-way voice communications; (2) requires a broadband connection from the user's location; (3) requires Internet protocol-compatible customer premises equipment (CPE); and (4) permits users generally to receive calls that originate on the public switched telephone network and to terminate calls to the public switched telephone network.

[141] Section 307(a) states: "The Commission, if public convenience, interest, or necessity will be served thereby, subject to the limitations of this Act, shall grant to any applicant therefor a station license provided for by this Act." 47 U.S.C. § 307(a).

[142] *Id.* § 309(j)(3).

[143] Section 316(a)(1) states:

> Any station license or construction permit may be modified by the Commission either for a limited time or for the duration of the term thereof, if in the judgment of the Commission such action will promote the public interest, convenience, and necessity, or the provisions of this Act or of any treaty ratified by the United States will be more fully complied with. No such order of modification shall become final until the holder of the license or permit shall have been notified in writing of the proposed action and the grounds and reasons therefor, and shall be given reasonable opportunity, of at least thirty days, to protest such proposed order of modification; except that, where safety of life or property is involved, the Commission may by order provide, for a shorter period of notice.

47 U.S.C. § 316(a)(1).

[144] 47 U.S.C. § 154(k). In *Comcast*, the D.C. Circuit "readily accept[ed]" that "certain assertions of Commission authority could be 'reasonably ancillary' to the Commission's statutory responsibility to issue a report to Congress. For example, the Commission might impose disclosure requirements on regulated entities in order to gather data needed for such a report." 600 F.3d at 659.

[145] Section 4(o) of the Act states: "For the purpose of obtaining maximum effectiveness from the use of radio and wire communications in connection with safety of life and property, the Commission shall investigate and study all (continued….)

requirements proposed in this *NPRM* pursuant to authority ancillary, or directly pursuant, to both or either of these provisions?

71. Finally, are there other sources of authority set forth in the Act that would support Commission action? How would the statutory goals of Sections 1302(a) and (b) be furthered by outage reporting from broadband and interconnected VoIP providers?[146] Are there other statutory mandates relevant to the Commission's direct or ancillary authority?

72. We note that some parties are already on the record indicating that ancillary authority exists for the Commission to require outage reporting by interconnected VoIP service providers and broadband ISPs,[147] while others have indicated that they believe the Commission has no legal authority,[148] has not yet demonstrated legal authority,[149] or has questionable legal authority,[150] to extend outage reporting

(Continued from previous page)
phases of the problem and the best methods of obtaining the cooperation and coordination of these systems." *Id.* § 154(o).

[146] 47 U.S.C. § 1302.

[147] For example, in comments filed in response to the *PSHSB PN*, the Massachusetts Department of Telecommunications and Cable (MDTC) stated that, with respect to interconnected VoIP services, "based on past precedent and until the Commission makes a final determination about the appropriate regulatory classification of interconnected VoIP services, the Commission may impose outage reporting requirements pursuant to its Title I ancillary authority." MDTC points out that relying on its ancillary authority, the Commission has extended numerous common carrier requirements to interconnected VoIP service providers, including E-9-1-1, federal USF contributions, CPNI, disability rights access, payment of federal regulatory fees, local number portability, FCC Form 477 data reporting, and discontinuance. MDTC Comments, filed Aug., 2, 2010, at 6-7 (*citing* court and Commission decisions). In addition, the California Public Utilities Commission states that: "the FCC legally can exercise authority as proposed in the Notice, to expand its Part 4 outage reporting requirements to interconnected VoIP or Internet access service providers. Nonetheless, the Commission should first resolve the issue of its authority, before it extends the Part 4 reporting requirements." Comments of the California Public Utilities Commission and the People of the State of California, filed Aug. 2, 2010, at 6.

[148] MetroPCS states that "[t]he Commission has no authority to require outage reporting of broadband Internet access providers under any cited section of Title II or Title III, and any information collection requirements are limited by the burden placed on licensees and by the Commission's ability to take action related to its findings. This is particularly true with regard to the asserted Title II sources of authority, as the Commission may not regulate Internet access service under Title II because it is an information service, outside the scope of that portion of the [Communications] Act [of 1934, as amended]. And, based on the decision in *Comcast Corp. v. FCC* [600 F.3d 642 (D.C. Cir. 2010)], the FCC cannot connect its Title I authority to other statutory mandates on which to base its ancillary jurisdiction. Accordingly, the Commission does not have the necessary authority to require outage reporting by broadband Internet access service providers." Comments of MetroPCS Communications, Inc., filed Aug 2, 2010, at 3-4. Citing the same decision, Laurence Brett Glass states that "it does not appear that the Commission currently has authority to impose outage reporting requirements upon broadband Internet service providers." LARIAT Comments, filed Aug 2, 2010, at 3.

[149] AT&T states that "the Bureau has not yet articulated a clear grant of authority upon which to base its proposal to require ISPs and VoIP providers to collect information on network outages on par with the present Part 4 regulations applicable to common carriers. In the *Public Notice,* the Bureau alludes to Title II and Title II of the [Communications] Act [of 1934, as amended]; however, it does not explain how these titles confer specific authority on the Commission to undertake this program or, if necessary, how any alleged specific authority might provide the basis for a claim of ancillary authority, given that ISPs are information service providers and the Commission has never addressed the regulatory classification of VoIP providers." Comments of AT&T Inc., filed Aug 2, 2010, at 10. AT&T further states that "[i]t is well-established that the Commission may only exercise the authority it has been granted by Congress under the Act." *Id.* Further, United States Internet Service Provider Association states: "The Commission must articulate a well-reasoned, sustainable legal theory before it can adopt any rules." Comments of the United States Internet Service Provider Association, filed Aug 2, 2010, at 5.

[150] Sprint Nextel states that "absent FCC decisions in [*Framework for Broadband Internet Service,*] GN Docket No. 10-127 and [*IP-Enabled Services,*] WC Docket 04-36, the imposition of such a reporting scheme may be of (continued….)

requirements in this manner. We seek comment on these views.

VIII. CONCLUSION

73. For the reasons stated above, we propose to extend our outage reporting requirements currently set forth in Part 4 of the Commission's Rules to interconnected VoIP service providers and broadband ISPs that support critical public safety communications. We request comment on these proposed rules and any changes to our communications outage reporting rules that would eliminate inadequacies in these reporting requirements. Based upon the comments that we receive in this proceeding and our analysis of the information before us, we may make such additions and modification to our existing and proposed communications outage-reporting requirements as may be necessary or desirable to fulfill the objectives and mandates of the Communications Act.

IX. PROCEDURAL MATTERS

A. *EX PARTE* RULES – PERMIT-BUT-DISCLOSE

74. This rulemaking shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[151] Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentations must contain summaries of the substance of the presentations and not merely a listing of the subjects discussed. More than a one or two sentence description of the views and arguments presented generally is required.[152] Other requirements pertaining to oral and written presentations are set forth in section 1.1206(b) of the Commission's rules.[153]

B. COMMENT PERIOD AND PROCEDURES

75. Pursuant to Sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. All filings related to this Notice of Proposed Rule Making should refer to PS Docket No. 11-82. Comments may be filed using: (1) the Commission's Electronic Comment Filing System (ECFS), (2) the Federal Government's eRulemaking Portal, or (3) by filing paper copies. *See* Electronic Filing of Documents in Rulemaking Proceedings, 63 FR 24121 (1998).

- *Electronic Filers*: Comments may be filed electronically using the Internet by accessing the ECFS: http://fjallfoss.fcc.gov/ecfs2/ or the Federal eRulemaking Portal: http://www.regulations.gov. Filers should follow the instructions provided on the website for submitting comments.
    - ECFS filers must transmit one electronic copy of the comments for PS Docket No. 11-82. In completing the transmittal screen, filers should include their full name, U.S. Postal Service mailing address, and the applicable docket number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions, filers should send an e-mail to ecfs@fcc.gov, and include the following words in the body of the message, "get form." A sample form and directions will be sent in response.
- *Paper Filers*: Parties who choose to file by paper must file an original and four copies of each filing. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). All filings must be addressed to the Commission's Secretary, Marlene H. Dortch, Office of the Secretary, Federal Communications Commission, 445 12th

(Continued from previous page)
questionable legality." Reply Comments of Sprint Nextel Corporation, filed Aug. 2, 2010, at 3.

[151] 47 C.F.R. §§ 1.1200 *et seq*.

[152] *See* 47 C.F.R. § 1.1206(b)(2).

[153] 47 C.F.R. § 1.1206(b).

Street, S.W., Washington, D.C.

- All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be addressed to FCC Headquarters at 445 12th St., SW, Room TW-A325, Washington, DC 20554.All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building. The filing hours at this location are 8:00 a.m. to 7:00 p.m. **PLEASE NOTE:** The Commission's former filing location at 236 Massachusetts Avenue, NE is permanently closed.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.
- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street SW, Washington, DC 20554

76. Parties should send a copy of their filings to Joyce Jones, Federal Communications Commission, Room 6404, 445 12th Street, S.W., Washington, D.C. 20554, or by e-mail to joyce.jones@fcc.gov. Parties shall also serve one copy with the Commission's copy contractor, Best Copy and Printing, Inc. (BCPI), Portals II, 445 12th Street, S.W., Room CY-B402, Washington, D.C. 20554, (202) 488-5300, or via e-mail to fcc@bcpiweb.com.

77. Documents in PS Docket No. 11-82 will be available for public inspection and copying during business hours at the FCC Reference Information Center, Portals II, 445 12th Street S.W., Room CY-A257, Washington, D.C. 20554. The documents may also be purchased from BCPI, telephone (202) 488-5300, facsimile (202) 488-5563, TTY (202) 488-5562, e-mail fcc@bcpiweb.com..

78. **Accessible Formats:** 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 call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

C. INITIAL REGULATORY FLEXIBILITY ANALYSIS

79. As required by the Regulatory Flexibility Act of 1980 (RFA),[154] the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities of the policies and rules proposed in the *NPRM*. The IRFA is set forth in Appendix B. We request written public comment on the IRFA. Comments must be filed in accordance with the same filing dates deadlines as comments filed in response to this *NPRM* as listed on the first page of this document, and must have a separate and distinct heading designating them as responses to the IRFA. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of this *NPRM*, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.

D. INITIAL PAPERWORK REDUCTION ANALYSIS

80. This document contains proposed new information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (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 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.

E. FURTHER INFORMATION

81. For further information concerning this rulemaking proceeding, contact Gregory F. Intoccia,

[154] 5 U.S.C. § 603.

Public Safety and Homeland Security Bureau, at (202) 418-1300, Federal Communications Commission, 445 12th Street, S.W., Washington, D.C. 20554; or Gregory.Intoccia@fcc.gov.

X. ORDERING CLAUSES

82. Accordingly, IT IS ORDERED, pursuant to Sections 1, 2, 4(i)-(k), 4(o), 218, 219, 230, 256, 301, 302(a), 303(f), 303(g), 303(j), 303(r), 403, 615a-1, 621(b)(3), 621(d), and 1302(a), and 1302(b) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i)-(k), 154(o), 218, 219, 230, 256, 301, 302(a), 303(f), 303(g), 303(j), 303(r), 403, 615a-1, 621(b)(3), 621(d), 1302(a), and 1302(b) and Section 1704 of the Omnibus Consolidated and Emergency Supplemental Appropriations Act of 1998, 44 U.S.C. § 3504, this Notice of Proposed Rulemaking IS ADOPTED.

83. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Notice of Proposed Rulemaking, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

84. IT IS FURTHER ORDERED that pursuant to applicable procedures set forth in Sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R. §§ 1.415, 1.419, interested parties may file comments on this Notice of Proposed Rulemaking on or before 60 days after publication in the Federal Register, and reply comments on or before 90 days after publication in the Federal Register.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Proposed Rules

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend Part 4 of Title 47 of the Code of Federal Regulations (C.F.R.) as follows:

PART 4 – DISRUPTIONS TO COMMUNICATIONS

GENERAL

The authority citation for Part 4 is amended to read as follows:

Authority: Sec. 5, 48 Stat. 1068, as amended; 47 U.S.C. 154, 155, 201, 251, 307, 316, 615a-1, 1302(a), and 1302(b).

1. Section 4.3 is amended by amending paragraph (h) and adding paragraphs (i), (j) and (k) to read as follows:

§ 4.3 Communications providers covered by the requirements of this part.

* * * * *

(h) *Broadband Internet access service providers* are providers of any mass-market retail service by wire or radio that is able to support interconnected VoIP service.

(i) *Broadband backbone Internet service providers* are providers of long-haul transmission for one or more broadband Internet access service providers (*e.g.*, typically connecting traffic among major cities).

(j) *Interconnected Voice over Internet Protocol (VoIP) providers* are providers of interconnected VoIP service. *See* § 9.3 of this chapter for the definition of interconnected VoIP service. Such providers may be facilities-based or non-facilities-based.

(k) *Exclusion of equipment manufacturers or vendors.* Excluded from the requirements of this part 4 are those equipment manufacturers or vendors that do not maintain or provide communications networks or services used by communications providers in offering communications.

2. Section 4.5 is amended by adding paragraphs (f) and (g) to read as follows:

§ 4.5 Definitions of outage, special offices and facilities, 9-1-1 special facilities, packet loss, latency, jitter, and point of presence.

* * * * *

(f) Packet loss is defined as the loss of one or more packets of data traveling across a computer network, which after being transmitted from a source, fail(s) to reach the destination point designated in the transmitting message.

(g) Latency is defined as the average time delay for a packet to travel from a source to a destination.

(h) Jitter is defined as the average variation in the delay between received packets of an Internet Protocol (IP) packet data stream.

(i) An Internet Point of Presence (PoP) is defined as the facility at which an Internet Service Provider connects to its end users. A PoP usually includes routers, digital/analog call aggregators, servers, and frequently frame relays or Asynchronous Transfer Mode (ATM) switches.

3. Section 4.7 is amended by changing paragraph (e) as follows:

§ 4.7 Definitions of metrics used to determine the general outage-reporting threshold criteria.

* * * * *

(e) "User minutes" are defined as:

(1) Assigned telephone number minutes (as defined in paragraph (c) of this section), for telephony, including non-mobile interconnected VoIP telephony, and for those paging networks in which each individual user is assigned a telephone number;

(2) The mathematical result of multiplying the duration of an outage, expressed in minutes, by the number of end users potentially affected by the outage, for all other forms of communications. For wireless service providers and interconnected VoIP service providers to mobile users, the number of potentially affected users should be determined by multiplying the simultaneous call capacity of the affected equipment by a concentration ratio of 8. For Broadband access providers to non-mobile users, the number of IP addresses affected should be used. For Broadband access providers to mobile users, the number of potentially affected users should be determined by multiplying the maximal number of simultaneous users by a concentration ratio of 8.

* * * * *

4. Section 4.9 is amended by adding paragraphs (g) through (i) to read as follows

§ 4.9 Outage reporting requirements – threshold criteria.

* * * * *

(g) Interconnected VoIP Service Providers. All interconnected VoIP service providers shall submit electronically a Notification to the Commission within 120 minutes of discovering that they have experienced on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 30 minutes duration:

(1) Of a Call Agent, Session Border Controller, Signaling Gateway, Call Session Control Function, or Home Subscriber Server:

(2) That potentially affects at least 900,000 user minutes of interconnected VoIP service and results in (i) complete loss of service; or (ii) an average packet loss of 1 percent or greater; or (iii) average round-trip latency of 100 ms or greater; or (iv) average jitter of 4 ms or greater, with all packet loss, latency, and jitter measurements taken in each of at least 6 consecutive 5 minute intervals from source to destination host;

(3) That potentially affects any special offices and facilities (in accordance with paragraphs (a)-(d) of § 4.5); or

(4) That potentially affects a 9-1-1 special facility (as defined in (e) of § 4.5), in which case they also shall notify, as soon as possible by telephone or other electronic means, any official who has been designated by the management of the affected 9-1-1 facility as the provider's contact person for communications outages at that facility, and the provider shall convey to that person all available information that may be useful to the management of the affected facility in mitigating the effects of the outage on efforts to communicate with that facility.

Not later than 72 hours after discovering the outage, the provider shall submit electronically an Initial Communications Outage Report to the Commission. Not later than thirty days after discovering the outage, the provider shall submit electronically a Final Communications Outage Report to the Commission. The Notification and the Initial and Final reports shall comply with all of the requirements of § 4.11.

(h) Broadband Internet Access Service Providers. All broadband Internet access service providers shall submit electronically a Notification to the Commission within 120 minutes of discovering that they have experienced on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 30 minutes duration:

(1) Of a ISP-operated Domain Name System server, Dynamic Host Control Protocol server, or Home Subscriber Server;

(2) That potentially affects at least 900,000 user minutes and results in (i) complete loss

of service; or (ii) an average packet loss of 1 percent or greater, or (iii) average round-trip latency of 100 ms or greater, or (iv) average jitter of 4 ms or greater, with all packet loss, latency, and jitter measurements taken in each of at least 6 consecutive 5 minute intervals from source to destination host;

(3) That potentially affects any special offices and facilities (in accordance with paragraphs (a)-(d) of § 4.5); or

(4) That potentially affects a 9-1-1 special facility (as defined in (e) of § 4.5), in which case they also shall notify, as soon as possible by telephone or other electronic means, any official who has been designated by the management of the affected 9-1-1 facility as the provider's contact person for communications outages at that facility, and the provider shall convey to that person all available information that may be useful to the management of the affected facility in mitigating the effects of the outage on efforts to communicate with that facility.

Not later than 72 hours after discovering the outage, the broadband Internet access service provider shall submit electronically an Initial Communications Outage Report to the Commission. Not later than thirty days after discovering the outage, the broadband Internet access service provider shall submit electronically a Final Communications Outage Report to the Commission. The Notification and the Initial and Final reports shall comply with all of the requirements of § 4.11.

(i) Broadband Backbone ISPs. All broadband backbone ISPs shall submit electronically a Notification to the Commission within 120 minutes of discovering that they have experienced an outage, with measurements taken in each of at least 6 consecutive 5 minute intervals for any Point of Presence-to-Point of Presence (PoP-to-PoP) pair for which they lease, own or operate at least one of the PoPs, with: (1) an average packet loss of 1 percent or greater; (2) average round-trip latency of 100 ms or greater; or (3) average jitter of 4 ms or greater from source to destination PoP. In addition, all broadband backbone ISPs shall submit electronically a Notification to the Commission within 120 minutes of discovering any loss of a PoP, Exchange Point, core router, root name servers, ISP-operated Domain Name System servers, or Dynamic Host Control Protocol server for 30 minutes or longer.

Not later than 72 hours after discovering the outage, the broadband backbone ISP shall submit electronically an Initial Communications Outage Report to the Commission. Not later than thirty days after discovering the outage, the broadband backbone ISP shall submit electronically a Final Communications Outage Report to the Commission. The Notification and the Initial and Final reports shall comply with all of the requirements of § 4.11.

APPENDIX B

Initial Regulatory Flexibility Analysis

Initial Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Commission has prepared this present 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 this *Notice of Proposed Rule Making* (*NPRM*). Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments provided in "Comment Period and Procedures" of this *NPRM*. The Commission will send a copy of this *NPRM,* including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[2] In addition, the *NPRM* and IRFA (or summaries thereof) will be published in the Federal Register.[3]

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

2. In 2005, the Commission adopted rules requiring providers of interconnected Voice over Internet Protocol (VoIP) service to supply E9-1-1 capabilities to their customers as a standard feature from wherever the customer is using the service.[4] In 2008, Congress enacted the New and Emerging Technologies 9-1-1 Improvement Act of 2008 that, among other things, amended the 9-1-1 Act to codify the Commission's E9-1-1 rules for interconnected VoIP providers.[5] Moreover, interconnected VoIP service providers generally must transmit all 9-1-1 calls, including Automatic Number Identification (ANI) and the caller's Registered Location for each call, to the PSAP, designated statewide default answering point, or appropriate local emergency authority.[6] Currently, however, the Commission's outage reporting rules[7] covering legacy circuit-switched voice and/or paging communications over wireline, wireless, cable and satellite communications services do not also cover interconnected VoIP service providers or the broadband Internet Service Providers (ISPs) on whose networks interconnected VoIP services are carried.[8] As a result, the Commission currently cannot monitor the reliability and availability of 9-1-1 and E9-1-1 communications that depend on these systems.

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[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601-12., has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121. Title II, 110 Stat. 857 (1996).

[2] *See* 5 U.S.C. § 603(a).

[3] *See id.*

[4] IP-Enabled Services; E9-1-1 requirements for IP-Enabled Service Providers, WC Docket No. 04-36, WC Docket No. 05-196, *First Report and Order and Notice of Proposed Rulemaking*, 20 FCC Rcd 10245, 10246 (2005) (*VoIP 9-1-1 Order and VoIP 9-1-1 NPRM).*

[5] New and Emerging Technologies 9-1-1 Improvement Act of 2008, Pub. L. No. 110-283, 122 Stat. 2620 (2008).

[6] 47 C.F.R. § 9.5(b). The Registered Location is "[t]he most recent information obtained by an interconnected VoIP service provider that identifies the physical location of an end user." 47 C.F.R. § 9.3.

[7] 47 C.F.R. Part 4.

[8] For purposes of this discussion, the term "broadband ISPs" includes broadband Internet access service providers and/or broadband backbone ISPs.

3. With the objective of ensuring reliability of related networks and services, the *NPRM* proposes:

- to extend the Commission's mandatory outage reporting rules under Part 4 of its rules[9] to cover interconnected VoIP service[10] providers and to "broadband Internet service providers" meaning "broadband Internet access service providers" and "broadband backbone Internet service providers";[11]

- to define "interconnected Voice over Internet Protocol (VoIP) providers" as providers of interconnected VoIP service, which is defined in Section 9.3 of the Commission's rules;[12]

- to define "broadband Internet access service providers" as "providers of any mass-market retail service by wire or radio that is able to support interconnected VoIP service";[13]

- to define "broadband backbone Internet service providers" as "providers of long-haul transmission for one or more broadband Internet access service providers (*e.g.*, typically connecting traffic among major cities)";

- to apply Part 4 outage reporting requirements to both facilities-based and non-facilities-based interconnected VoIP service providers;[14]

- that a significant degradation of interconnected VoIP service exists must be reported to the Commission electronically, using the Commission-approved Web-based outage reporting templates, when an interconnected VoIP service provider has experienced an outage or service degradation for at least 30 minutes: (a) on any major facility (*e.g.,* Call Agent, Session Border Controller, Signaling Gateway, Call Section Control Function (CSCF), Home Subscriber Server (HSS) that it owns, operates, leases, or otherwise utilizes; (b) potentially affecting generally useful availability and connectivity of at least 900,000 user minutes (*e.g.*, average packet loss of greater than one percent for 30,000 users for 30 minutes); or (c) otherwise potentially affecting special offices, or special facilities, including 9-1-1 Public Safety Answering Points (PSAPs);

- that an outage in the context of broadband Internet access service provider be defined as "the loss

[9] 47 C.F.R. Part 4.

[10] 47 C.F.R. § 9.3 defines an interconnected Voice over Internet Protocol (VoIP) service as a service that: (1) enables real-time, two-way voice communications; (2) requires a broadband connection from the user's location; (3) requires Internet protocol-compatible customer premises equipment (CPE); and (4) permits users generally to receive calls that originate on the public switched telephone network and to terminate calls to the public switched telephone network.

[11] The proposed term "broadband Internet service providers" would not include providers that only offer information content, applications, services, or devices accessed over or connected to broadband Internet access services, such as social network providers, which would not be covered by the reporting obligations proposed in the *NPRM*.

[12] 47 C.F.R. § 9.3.

[13] 47 C.F.R. Part 4.

[14] Facilities-based interconnected VoIP service providers own and operate the broadband access communications infrastructure required to deliver VoIP services. They may provide retail VoIP services directly to residential and business customers or they may provide wholesale VoIP services to other businesses, including non-facilities-based VoIP service providers that resell VoIP service to end users. *See March 2011 Local Competition Report,* Figure 5.

to the end user of generally-useful availability and Internet connectivity", consistent with the current definition of "outage" in Part 4,[15] which places emphasis on a "significant degradation" of communications;

- to measure "generally-useful availability and connectivity" of broadband Internet service as it relates to a broadband Internet access service provider as the operational state in which the transmission from the end user to the broadband ISP Point of Presence (PoP)[16] is operating as designed for normal use, the logical functions and relay systems required from ISPs are operating as designed for normal use, and the end user is not prevented by the broadband Internet access service provider from establishing communications with any destination device on the global Internet that has an assigned Internet Protocol address;

- that, for broadband Internet access service providers, the "loss of generally-useful availability and connectivity" can be measured as degraded service with packet loss (*i.e.*, dropped or corrupted packets)[17] of one percent or more, round-trip latency (*i.e.*, the amount of delay encountered when packets are sent from a source to a destination and back to the source)[18] of 100 ms or more, or jitter (*i.e.*, the variation in the delay)[19] of 4 ms or more from the source to the destination host;

- to amend the Commission's rules to require a broadband Internet access service provider to submit reports to the Commission electronically, using the Commission-approved Web-based outage reporting templates, in cases where it has experienced an outage or service degradation for at least 30 minutes: (a) on any major facility (*e.g.*, authoritative Domain Name System (DNS) server,[20] Dynamic Host Control Protocol (DHCP) server,[21] Home Subscriber Server (HSS)[22] that it owns, operates, leases, or otherwise utilizes; (b) potentially affecting generally-useful availability and connectivity of at least 900,000 user minutes (*e.g.*, average packet loss of greater than one percent for 30,000 users for 30 minutes); or (c) that affects any special offices and facilities, including major military installations, key government facilities, nuclear power plants, airports, and PSAPs;

- that an outage in the context of a broadband backbone ISP be defined as the loss of "generally-useful availability and Internet connectivity," consistent with the current definition of "outage" in Part 4 of the Commission's rules, which places emphasis on a "significant degradation" of communications;

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[15] 47 C.F.R. § 4.5.

[16] An Internet Point of Presence (PoP) is the facility at which a regional or backbone ISP connects to its customers.

[17] *See* RFC 2680 A One-way Packet Loss Metric for IP Performance Metrics (IPPM) (Sept. 1999), https://datatracker.ietf.org/doc/rfc2680/?include_text=1 (last visited March 1, 2011).

[18] *See* RFC 2681 A Round-Trip Delay Metric for IP Performance Metrics (IPPM) (Sept. 1999), https://datatracker.ietf.org/doc/rfc2681/ (last visited March 1, 2011).

[19] *See* RFC 3393 IP Packet Delay Variation Metric for IP Performance Metrics (IPPM) (Nov. 2002), http://tools.ietf.org/html/rfc3393 (last visited March 1, 2011). *See also* RFC 3550 RTP – A Transport Protocol for Real-Time Applications (Jul. 2003), http://www.ietf.org/rfc/rfc3550.txt (last visited March 1, 2011) for a discussion on estimating the interarrival jitter.

[20] The Domain Name System translates Internet domain and host names to IP addresses.

[21] Dynamic Host Control Protocol is a protocol that assigns unique IP addresses to devices, then releases and renews these addresses as devices leave and re-join the network.

[22] The Home Subscriber Server (HSS) for IMS networks is analogous to the Home Location Register (HLR) in mobile networks. The HSS acts as a central repository of all subscriber-specific authorizations and service profiles and preferences for an IMS network.

- that "generally-useful availability and connectivity"[23] of broadband Internet service, as it relates to a broadband backbone ISP, be defined as: (a) the operational state in which the transmission between ISP PoPs[24] is operating as designed for normal use; (b) the logical functions and relay systems required from ISPs are operating as designed for normal use; and/or (c) the connected access ISP networks are able to communicate with any destination device on the global Internet that has an assigned Internet Protocol address;
- that, for broadband backbone ISPs, the "loss of generally-useful availability and connectivity" can be measured as degraded service with packet loss of one percent or more, round-trip latency (*i.e.*, the amount of delay encountered when packets are sent from a source to a destination and back to the source) of 100 ms or more, or jitter of 4 ms or more as measured from source to destination PoP;
- to require a broadband backbone ISP to submit outage reports when it experiences an outage or service degradation for at least 30 minutes: (a) on any major facility (*e.g.*, PoP, Exchange Point,[25] core router,[26] root name server,[27] ISP-operated DNS server, or DHCP server) that it owns, operates, leases, or otherwise utilizes; (b) potentially affecting generally-useful availability and connectivity for any Internet PoP-to-Internet PoP (PoP-to-PoP) pair for which they lease, own or operate at least one of the PoPs where the "loss of generally useful availability and connectivity" is defined as: (1) an average packet loss of one percent or greater; (2) average round-trip delay of 100 ms or greater; or (3) average jitter of 4 ms or greater with measurements taken in each of at least six consecutive five-minute intervals as measured from source to destination PoP; and
- to require the same reporting process for outages experienced by interconnected VoIP service providers and broadband ISPs as the existing reporting process for legacy communications providers, such as wireline communications providers, under Part 4 of the Commission's rules, namely: providers are required to submit a Notification within two hours of discovering a reportable outage.[28] An Initial Report is due within 72 hours after discovering the outage, and a

[23] The phrase "generally-useful availability" is used to mean both that the transmission from the end user to the Local Access Provider (*e.g.,* DSL provider) is operating as designed for normal use, and that the logical functions and relay systems required from either the Local Access Provider or the regional Internet Service Provider are also operating as designed for normal use. The phrase "generally-useful connectivity" is used to mean the end user is not prevented by a Local Access Provider, Internet Service Provider, or Internet Exchange Point failure from establishing Internet connectivity with any destination device on the global Internet that has an assigned Internet Protocol address. Combining these two related concepts, the *NPRM* refers to the user's normal expectations for Internet service as having "generally-useful availability and connectivity." "Degradation" is sometimes used to refer to excess packet loss or a general slowing down of one or more (if interconnected) communications networks, and usually affects the extent to which the connectivity of telecommunications is generally useful.

[24] An Internet Point of Presence (PoP) is the facility at which a regional or backbone ISP connects to its customers.

[25] An IP telecommunications Exchange Point is a facility where multiple ISPs connect to exchange IP packets and network routing information.

[26] A core router is a router operating in the Internet backbone.

[27] A root name server is a name server for the Domain Name System's root zone and translates host names into IP addresses.

[28] *See* 47 C.F.R. §4.9. Pursuant to 47 C.F.R. § 4.11, a Notification must include: "The name of the reporting entity; the date and time of onset of the outage; a brief description of the problem; service effects; the geographic area affected by the outage; and a contact name and contact telephone number . . . ." Also pursuant to 47 C.F.R. § 4.11, currently Notification and the Initial and Final Communications Outage Reports are submitted electronically to the Commission using Commission-approved Web-based outage reporting templates. Sometimes this outage reporting system has been referred to as the Commission's Network Outage Reporting System, or "NORS."

Final Report is due within 30 days after discovering the outage.[29]

4. The Commission traditionally has addressed reliability issues by working with communications service providers to develop and promote best practices that address vulnerabilities in the communications network, and by measuring the effectiveness of best practices through outage reporting. Under the Commission's current rules, the outage reporting process has been effective in improving the reliability, resiliency and security of the legacy services. The Commission staff collaborates with individual providers and industry bodies to review outage results and address troublesome areas. These efforts have resulted in dramatic reductions in outages affecting legacy services. The aim of extending outage reporting process to cover interconnected VoIP service providers and broadband ISPs is to achieve a similar result: improve the reliability, resiliency and security of their services utilizing an approach that has resulted in dramatic outage reductions for other services.

B. Legal Basis

5. The legal basis for the rule changes proposed in this *NPRM* are contained in Sections 1, 2, 4(i)-(k), 4(o), 218, 219, 230, 256, 301, 302(a), 303(f), 303(g), 303(j), 303(r), 403, 615a-1, 621(b)(3), 621(d), 1302(a), and 1302(b) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i)-(k), 154(o), 218, 219, 230, 256, 301, 302(a), 303(f), 303(g), 303(j), 303(r), 403, 615a-1, 621(b)(3), 621(d), 1302(a), and 1302(b), and Section 1704 of the Omnibus Consolidated and Emergency Supplemental Appropriations Act of 1998, 44 U.S.C. § 3504.

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

6. The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the proposed rules adopted herein.[30] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[31] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[32] A small business concern is one which: (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).[33]

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[29] *See* 47 C.F.R. § 4.9. Pursuant to 47 C.F.R. § 4.11, the Initial Report must "contain all pertinent information then available on the outage and shall be submitted in good faith." *Id*. A Final Report must "contain all pertinent information on the outage, including any information that was not contained in, or that has changed from that provided in, the Initial report." *Id*. Also pursuant to 47 C.F.R. § 4.11, currently Notification and the Initial and Final Communications Outage Reports are submitted electronically to the Commission using Commission-approved Web-based outage reporting templates. Sometimes this outage reporting system has been referred to as the Commission's Network Outage Reporting System, or "NORS."

[30] 5 U.S.C. § 603(b)(3).

[31] 5 U.S.C. § 601(6).

[32] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[33] Small Business Act, 15 U.S.C. § 632.

1. Total Small Entities

7. Our action may, over time, affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three comprehensive, statutory small entity size standards.[34] First, nationwide, there are a total of approximately 27.5 million small businesses, according to the SBA.[35] In addition, a "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[36] Nationwide, as of 2007, there were approximately 1, 621,315 small organizations.[37] Finally, the term "small governmental jurisdiction" is defined generally as "governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[38] Census Bureau data for 2011 indicate that there were 89,476 local governmental jurisdictions in the United States.[39] We estimate that, of this total, as many as 88, 506 entities may qualify as "small governmental jurisdictions."[40] Thus, we estimate that most governmental jurisdictions are small.

2. Interconnected VoIP and Broadband ISPs

8. *Internet Service Providers.* The 2007 Economic Census places these firms, the services of which might include Voice over Internet protocol (VoIP), in either of two categories, depending on whether the service is provided over the provider's own telecommunications facilities (*e.g.*, cable and DSL ISPs), or over client-supplied telecommunications connections (*e.g.*, dial-up ISPs). The former are within the category of Wired Telecommunications Carriers,[41] which has an SBA small business size standard of 1,500 or fewer employees.[42] These are also labeled "broadband." The latter are within the category of All Other Telecommunications,[43] which has a size standard of annual receipts of $25 million

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[34] *See* 5 U.S.C. §§ 601(3)–(6).

[35] *See* SBA, Office of Advocacy, "Frequently Asked Questions," http://web.sba.gov/faqs (last visited March 17, 2011), figures are from 2009.

[36] 5 U.S.C. § 601(4).

[37] INDEPENDENT SECTOR, THE NEW NONPROFIT ALMANAC & DESK REFERENCE (2010).

[38] 5 U.S.C. § 601(5).

[39] U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2011, Table 427 (Data cited therein from 2007).

[40] The 2007 U.S Census data for small governmental organizations are not presented based on the size of the population in each such organization. There were 89,476 small governmental organizations in 2007. If we assume that county, municipal, township and school district organizations are more likely than larger governmental organizations to have populations of 50,000 or less, the total of these organizations is 52,125. If we make the same assumption about special districts, and also assume that special districts are different from county, municipal, township, and school districts, in 2007 there were 37,381 special districts. Therefore, of the 89,476 small governmental organizations documented in 2007, as many as 89,506 may be considered small under the applicable standard. This data may overestimate the number of such organizations that has a population of 50,000 or less. U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2011, Tables 426, 427 (Data cited therein are from 2007).

[41] *See* U.S. Census Bureau, 2007 NAICS Definitions, "517110 Wired Telecommunications Carriers," http://www.census.gov/naics/2007/def/ND517110.HTM#N517110 (last visited May 11, 2011).

[42] 13 C.F.R. § 121.201, NAICS code 517110.

[43] *See* U.S. Census Bureau, 2007 NAICS Definitions, "517919 All Other Telecommunications," http://www.census.gov/naics/2007/def/ND517919.HTM#N517919 (last visited May 11, 2011).

or less.[44] These are labeled non-broadband.

9. The most current Economic Census data for all such firms are 2007 data, which are detailed specifically for ISPs within the categories above. For the first category, the data show that 396 firms operated for the entire year, of which only 2 operated with more than 1,000 employees.[45] For the second category, the data show that 2,383 firms operated for the entire year. [46] Of those, only 37 had annual receipts of more than $25,499,999 per year. Consequently, we estimate that the majority of ISP firms are small entities. To ensure that this IRFA describes the universe of small entities that our action might affect, we discuss below, in turn, several different types of entities that might be currently providing interconnected VoIP service, Internet access service, or broadband backbone Internet service.

3. Wireline Providers

10. *Incumbent Local Exchange Carriers* (*Incumbent LECs*). Neither the Commission nor the SBA has developed a small business size standard specifically for incumbent local exchange services. The appropriate size standard under SBA rules is for the category Wired Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer employees. Census Bureau data for 2007, which now supersede data from the 2002 Census, show that there were 3,188 firms in this category that operated for the entire year. Of this total, 3,144 had employment of 999 or fewer, and 44 firms had had employment of 1,000 employees or more. Thus under this category and the associated small business size standard, the majority of these incumbent local exchange service providers can be considered small.[47]

11. The Commission has included small incumbent LECs in this present RFA analysis. As noted above, a "small business" under the RFA is one that, inter alia, meets the pertinent small business size standard (e.g., a telephone communications business having 1,500 or fewer employees), and "is not dominant in its field of operation."[48] The SBA's Office of Advocacy contends that, for RFA purposes, small incumbent LECs are not dominant in their field of operation because any such dominance is not "national" in scope.[49] The Commission has therefore included small incumbent LECs in this RFA analysis, although the Commission emphasizes that this RFA action has no effect on Commission analyses and determinations in other, non-RFA contexts.

12. *Interexchange Carriers*. Neither the Commission nor the SBA has developed a small business size standard specifically for providers of interexchange services. The appropriate size standard under SBA rules is for the category Wired Telecommunications Carriers. Under that size standard, such a

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[44] 13 C.F.R. § 121.201, NAICS code 517919 (updated for inflation in 2008).

[45] *See* U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, "Establishment and Firm Size," NAICS code 5171103 (released Nov. 19, 2010) (employment size), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en (last visited May 11, 2011).

[46] *See* U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, "Establishment and Firm Size," NAICS code 5179191 (released Nov. 19, 2010) (receipts size).

[47] *See* http://factfinder.census.gov/servlet/IBQTable?_bm=y&-fds_name=EC0700A1&-geo_id=&-_skip=600&-ds_name=EC0751SSSZ5&-_lang=en (last visited May 11, 2011).

[48] 5 U.S.C. § 601(3).

[49] Letter from Jere W. Glover, Chief Counsel for Advocacy, SBA, to William E. Kennard, Chairman, FCC (filed May 27, 1999). The Small Business Act contains a definition of "small business concern," which the RFA incorporates into its own definition of "small business." 15 U.S.C. § 632(a); 5 U.S.C. § 601(3). SBA regulations interpret "small business concern" to include the concept of dominance on a national basis. 13 C.F.R. § 121.102(b).

business is small if it has 1,500 or fewer employees.[50] Census Bureau data for 2007, which now supersede data from the 2002 Census, show that there were 3,188 firms in this category that operated for the entire year. Of this total, 3,144 had employment of 999 or fewer, and 44 firms had had employment of 1,000 employees or more. Thus under this category and the associated small business size standard, the Commission estimates that the majority of interexchange carriers are small entities that may be affected by our proposed action[51]

13. Neither the Commission nor the SBA has developed a small business size standard specifically for operator service providers. The appropriate size standard under SBA rules is for the category Wired Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer employees.[52] According to Commission data, 33 carriers have reported that they are engaged in the provision of operator services. Of these, an estimated 31 have 1,500 or fewer employees and 2 has more than 1,500 employees.[53] Consequently, the Commission estimates that the majority of operator service providers are small entities that may be affected by our proposed action.

4. Wireless Providers – Fixed and Mobile

14. To the extent the wireless services listed below are used by wireless firms for fixed and mobile broadband Internet access services, the *NPRM's* proposed rules may have an impact on those small businesses as set forth above and further below. Accordingly, for those services subject to auctions, we note that, as a general matter, the number of winning bidders that claim to qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Also, the Commission does not generally track subsequent business size unless, in the context of assignments and transfers or reportable eligibility events, unjust enrichment issues are implicated.

15. *Wireless Telecommunications Carriers (except Satellite)*. Since 2007, the Census Bureau has placed wireless firms within this new, broad, economic census category.[54] Prior to that time, such firms were within the now-superseded categories of "Paging" and "Cellular and Other Wireless Telecommunications."[55] Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.[56] For the category of Wireless Telecommunications Carriers (except Satellite), Census data for 2007, which supersede data contained in the 2002 Census, show that there were 1,383 firms that operated that year.[57] Of those 1,383, 1,368 had fewer than 100

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[50] 13 C.F.R. § 121.201, NAICS code 517110.

[51] *See* http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=600&-ds_name=EC0751SSSZ5&-_lang=en (last visited May 11, 2011).

[52] 13 C.F.R. § 121.201, NAICS code 517110.

[53] TRENDS IN TELEPHONE SERVICE, tbl. 5.3.

[54] *See* U.S. Census Bureau, 2007 NAICS Definitions, "Wireless Communications Carriers (Except Satellite), NAICS code 517210," http://www.census.gov/naics/2007/def/ND517210.HTM#N517210 (last visited May 11, 2011).

[55] *See* U.S. Census Bureau, 2002 NAICS Definitions, "517211 Paging," http://www.census.gov/epcd/naics02/def/NDEF517.HTM (last visited May 11, 2011); and also U.S. Census Bureau, 2002 NAICS Definitions, "517212 Cellular and Other Wireless Telecommunications," http://www.census.gov/epcd/naics02/def/NDEF517.HTM (last visited May 11, 2011).

[56] 13 C.F.R. § 121.201, NAICS code 517210 (2007 NAICS). The now-superseded, pre-2007 CFR citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

[57] *See* U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?—bm=y&-geo—id=&-fds—name=EC0700A1&-—skip=700&-ds—name=EC0751SSSZ5&-—lang=en (last visited May 11, 2011).

employees, and 15 firms had more than 100 employees. Thus under this category and the associated small business size standard, the majority of firms can be considered small. Similarly, according to Commission data, 413 carriers reported that they were engaged in the provision of wireless telephony, including cellular service, Personal Communications Service (PCS), and Specialized Mobile Radio (SMR) Telephony services.[58] Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.[59] Consequently, the Commission estimates that approximately half or more of these firms can be considered small. Thus, using available data, we estimate that the majority of wireless firms can be considered small.

16. *Wireless Communications Services*. This service can be used for fixed, mobile, radiolocation, and digital audio broadcasting satellite uses. The Commission defined "small business" for the wireless communications services (WCS) auction as an entity with average gross revenues of $40 million for each of the three preceding years, and a "very small business" as an entity with average gross revenues of $15 million for each of the three preceding years.[60] The SBA has approved these definitions.[61] The Commission auctioned geographic area licenses in the WCS service. In the auction, which commenced on April 15, 1997 and closed on April 25, 1997, seven bidders won 31 licenses that qualified as very small business entities, and one bidder won one license that qualified as a small business entity.

17. *1670–1675 MHz Services*. This service can be used for fixed and mobile uses, except aeronautical mobile.[62] An auction for one license in the 1670–1675 MHz band commenced on April 30, 2003 and closed the same day. One license was awarded. The winning bidder was not a small entity.

18. *Wireless Telephony*. Wireless telephony includes cellular, personal communications services, and specialized mobile radio telephony carriers. As noted, the SBA has developed a small business size standard for Wireless Telecommunications Carriers (except Satellite).[63] Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees.[64] According to *Trends in Telephone Service* data, 413 carriers reported that they were engaged in wireless telephony.[65] Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.[66] Therefore, more than half of these entities can be considered small.

19. *Broadband Personal Communications Service.* The broadband personal communications services (PCS) spectrum is divided into six frequency blocks designated A through F, and the Commission has held auctions for each block. The Commission initially defined a "small business" for C- and F-Block licenses as an entity that has average gross revenues of $40 million or less in the three previous calendar years.[67] For F-Block licenses, an additional small business size standard for "very

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[58] *See* Trends in Telephone Service at Table 5.3.

[59] *See id.*

[60] *Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service (WCS)*, Report and Order, 12 FCC Rcd 10785, 10879, ¶ 194 (1997).

[61] *See* Letter from Aida Alvarez, Administrator, SBA, to Amy Zoslov, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, FCC (filed Dec. 2, 1998) (*Alvarez Letter 1998*).

[62] 47 C.F.R. § 2.106; *see generally* 47 C.F.R. §§ 27.1–.70.

[63] 13 C.F.R. § 121.201, NAICS code 517210.

[64] *Id*.

[65] TRENDS IN TELEPHONE SERVICE, tbl. 5.3.

[66] *Id.*

[67] *See Amendment of Parts 20 and 24 of the Commission's Rules – Broadband PCS Competitive Bidding and the Commercial Mobile Radio Service Spectrum Cap et al.*, Report and Order, 11 FCC Rcd 7824, 7850–52, paras. 57–60 (1996) ("*PCS Report and Order*"); *see also* 47 C.F.R. § 24.720(b).

small business" was added and is defined as an entity that, together with its affiliates, has average gross revenues of not more than $15 million for the preceding three calendar years.[68] These small business size standards, in the context of broadband PCS auctions, have been approved by the SBA.[69] No small businesses within the SBA-approved small business size standards bid successfully for licenses in Blocks A and B. There were 90 winning bidders that claimed small business status in the first two C-Block auctions. A total of 93 bidders that claimed small business status won approximately 40 percent of the 1,479 licenses in the first auction for the D, E, and F Blocks.[70] On April 15, 1999, the Commission completed the re-auction of 347 C-, D-, E-, and F-Block licenses in Auction No. 22.[71] Of the 57 winning bidders in that auction, 48 claimed small business status and won 277 licenses.

20. On January 26, 2001, the Commission completed the auction of 422 C and F Block Broadband PCS licenses in Auction No. 35. Of the 35 winning bidders in that auction, 29 claimed small business status.[72] Subsequent events concerning Auction 35, including judicial and agency determinations, resulted in a total of 163 C and F Block licenses being available for grant. On February 15, 2005, the Commission completed an auction of 242 C-, D-, E-, and F-Block licenses in Auction No. 58. Of the 24 winning bidders in that auction, 16 claimed small business status and won 156 licenses.[73] On May 21, 2007, the Commission completed an auction of 33 licenses in the A, C, and F Blocks in Auction No. 71.[74] Of the 12 winning bidders in that auction, five claimed small business status and won 18 licenses.[75] On August 20, 2008, the Commission completed the auction of 20 C-, D-, E-, and F-Block Broadband PCS licenses in Auction No. 78.[76] Of the eight winning bidders for Broadband PCS licenses in that auction, six claimed small business status and won 14 licenses.[77]

21. *Specialized Mobile Radio Licenses.* The Commission awards "small entity" bidding credits in auctions for Specialized Mobile Radio (SMR) geographic area licenses in the 800 MHz and 900 MHz bands to firms that had revenues of no more than $15 million in each of the three previous calendar years.[78] The Commission awards "very small entity" bidding credits to firms that had revenues of no more than $3 million in each of the three previous calendar years.[79] The SBA has approved these small

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[68] *See PCS Report and Order*, 11 FCC Rcd at 7852, para. 60.

[69] *See Alvarez Letter 1998*.

[70] *See Broadband PCS, D, E and F Block Auction Closes*, Public Notice, Doc. No. 89838 (rel. Jan. 14, 1997).

[71] *See C, D, E, and F Block Broadband PCS Auction Closes*, Public Notice, 14 FCC Rcd 6688 (WTB 1999). Before Auction No. 22, the Commission established a very small standard for the C Block to match the standard used for F Block. *Amendment of the Commission's Rules Regarding Installment Payment Financing for Personal Communications Services (PCS) Licensees*, WT Docket No. 97-82, Fourth Report and Order, 13 FCC Rcd 15743, 15768, para. 46 (1998).

[72] *See C and F Block Broadband PCS Auction Closes; Winning Bidders Announced*, Public Notice, 16 FCC Rcd 2339 (2001).

[73] *See Broadband PCS Spectrum Auction Closes; Winning Bidders Announced for Auction No. 58*, Public Notice, 20 FCC Rcd 3703 (2005).

[74] *See Auction of Broadband PCS Spectrum Licenses Closes; Winning Bidders Announced for Auction No. 71*, Public Notice, 22 FCC Rcd 9247 (2007).

[75] *Id*.

[76] *See Auction of AWS-1 and Broadband PCS Licenses Closes; Winning Bidders Announced for Auction 78*, Public Notice, 23 FCC Rcd 12749 (WTB 2008).

[77] *Id.*

[78] 47 C.F.R. § 90.814(b)(1).

[79] *Id.*

business size standards for the 900 MHz Service.[80] The Commission has held auctions for geographic area licenses in the 800 MHz and 900 MHz bands. The 900 MHz SMR auction began on December 5, 1995, and closed on April 15, 1996. Sixty bidders claiming that they qualified as small businesses under the $15 million size standard won 263 geographic area licenses in the 900 MHz SMR band. The 800 MHz SMR auction for the upper 200 channels began on October 28, 1997, and was completed on December 8, 1997. Ten bidders claiming that they qualified as small businesses under the $15 million size standard won 38 geographic area licenses for the upper 200 channels in the 800 MHz SMR band.[81] A second auction for the 800 MHz band was held on January 10, 2002 and closed on January 17, 2002 and included 23 BEA licenses. One bidder claiming small business status won five licenses.[82]

22. The auction of the 1,053 800 MHz SMR geographic area licenses for the General Category channels began on August 16, 2000, and was completed on September 1, 2000. Eleven bidders won 108 geographic area licenses for the General Category channels in the 800 MHz SMR band and qualified as small businesses under the $15 million size standard.[83] In an auction completed on December 5, 2000, a total of 2,800 Economic Area licenses in the lower 80 channels of the 800 MHz SMR service were awarded.[84] Of the 22 winning bidders, 19 claimed small business status and won 129 licenses. Thus, combining all four auctions, 41 winning bidders for geographic licenses in the 800 MHz SMR band claimed status as small businesses.

23. In addition, there are numerous incumbent site-by-site SMR licenses and licensees with extended implementation authorizations in the 800 and 900 MHz bands. We do not know how many firms provide 800 MHz or 900 MHz geographic area SMR service pursuant to extended implementation authorizations, nor how many of these providers have annual revenues of no more than $15 million. In addition, we do not know how many of these firms have 1,500 or fewer employees, which is the SBA-determined size standard.[85] We assume, for purposes of this analysis, that all of the remaining extended implementation authorizations are held by small entities, as defined by the SBA.

24. *Lower 700 MHz Band Licenses*. The Commission previously adopted criteria for defining three groups of small businesses for purposes of determining their eligibility for special provisions such as bidding credits.[86] The Commission defined a "small business" as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $40 million for the preceding three years.[87] A "very small business" is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $15 million for the preceding three years.[88] Additionally, the lower 700 MHz Service had a third category of small business status for Metropolitan/Rural Service Area (MSA/RSA) licenses—"entrepreneur"—which is defined as

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[80] *See* Letter from Aida Alvarez, Administrator, SBA, to Thomas Sugrue, Chief, Wireless Telecommunications Bureau, FCC (filed Aug. 10, 1999) (*Alvarez Letter 1999*).

[81] *See Correction to Public Notice DA 96-586 "FCC Announces Winning Bidders in the Auction of 1020 Licenses to Provide 900 MHz SMR in Major Trading Areas,"* Public Notice, 18 FCC Rcd 18367 (WTB 1996).

[82] *See Multi-Radio Service Auction Closes*, Public Notice, 17 FCC Rcd 1446 (WTB 2002).

[83] *See 800 MHz Specialized Mobile Radio (SMR) Service General Category (851–854 MHz) and Upper Band (861–865 MHz) Auction Closes; Winning Bidders Announced*, Public Notice, 15 FCC Rcd 17162 (2000).

[84] *See 800 MHz SMR Service Lower 80 Channels Auction Closes; Winning Bidders Announced*, Public Notice, 16 FCC Rcd 1736 (2000).

[85] *See generally* 13 C.F.R. § 121.201, NAICS code 517210.

[86] *See Reallocation and Service Rules for the 698–746 MHz Spectrum Band (Television Channels 52–59)*, Report and Order, 17 FCC Rcd 1022 (2002) (*Channels 52–59 Report and Order*).

[87] *See Channels 52–59 Report and Order*, 17 FCC Rcd at 1087-88, ¶ 172.

[88] *See id*.

an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $3 million for the preceding three years.[89] The SBA approved these small size standards.[90] An auction of 740 licenses (one license in each of the 734 MSAs/RSAs and one license in each of the six Economic Area Groupings (EAGs)) commenced on August 27, 2002, and closed on September 18, 2002. Of the 740 licenses available for auction, 484 licenses were won by 102 winning bidders. Seventy-two of the winning bidders claimed small business, very small business or entrepreneur status and won a total of 329 licenses.[91] A second auction commenced on May 28, 2003, closed on June 13, 2003, and included 256 licenses: 5 EAG licenses and 476 Cellular Market Area licenses.[92] Seventeen winning bidders claimed small or very small business status and won 60 licenses, and nine winning bidders claimed entrepreneur status and won 154 licenses.[93] On July 26, 2005, the Commission completed an auction of 5 licenses in the Lower 700 MHz band (Auction No. 60). There were three winning bidders for five licenses. All three winning bidders claimed small business status.

25. In 2007, the Commission reexamined its rules governing the 700 MHz band in the *700 MHz Second Report and Order*.[94] An auction of 700 MHz licenses commenced January 24, 2008 and closed on March 18, 2008, which included, 176 Economic Area licenses in the A Block, 734 Cellular Market Area licenses in the B Block, and 176 EA licenses in the E Block.[95] Twenty winning bidders, claiming small business status (those with attributable average annual gross revenues that exceed $15 million and do not exceed $40 million for the preceding three years) won 49 licenses. Thirty three winning bidders claiming very small business status (those with attributable average annual gross revenues that do not exceed $15 million for the preceding three years) won 325 licenses.

26. *Upper 700 MHz Band Licenses*. In the *700 MHz Second Report and Order*, the Commission revised its rules regarding Upper 700 MHz licenses.[96] On January 24, 2008, the Commission commenced Auction 73 in which several licenses in the Upper 700 MHz band were available for licensing: 12 Regional Economic Area Grouping licenses in the C Block, and one nationwide license in the D Block.[97] The auction concluded on March 18, 2008, with 3 winning bidders claiming very small business status (those with attributable average annual gross revenues that do not exceed $15 million for the preceding three years) and winning five licenses.

27. *700 MHz Guard Band Licensees*. In 2000, in the 700 MHz Guard Band Order, the Commission adopted size standards for "small businesses" and "very small businesses" for purposes of determining their eligibility for special provisions such as bidding credits and installment payments.[98] A small business in this service is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $40 million for the preceding three years.[99] Additionally, a very small business is an entity that, together with its affiliates and controlling principals, has average gross

[89] *See id.*, 17 FCC Rcd at 1088, ¶. 173.

[90] *See Alvarez Letter 1999*.

[91] *See Lower 700 MHz Band Auction Closes*, Public Notice, 17 FCC Rcd 17272 (WTB 2002).

[92] *See Lower 700 MHz Band Auction Closes*, Public Notice, 18 FCC Rcd 11873 (WTB 2003).

[93] *See id.*

[94] *700 MHz Second Report and Order*, Second Report and Order, 22 FCC Rcd 15289, 15359 n. 434 (2007).

[95] *See Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

[96] *700 MHz Second Report and Order*, 22 FCC Rcd 15289.

[97] *See Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

[98] *See Service Rules for the 746–764 MHz Bands, and Revisions to Part 27 of the Commission's Rules*, Second Report and Order, 15 FCC Rcd 5299 (2000) (*746–764 MHz Band Second Report and Order*).

[99] *See 746–764 MHz Band Second Report and Order*, 15 FCC Rcd at 5343, para. 108.

revenues that are not more than $15 million for the preceding three years.[100] SBA approval of these definitions is not required.[101] An auction of 52 Major Economic Area licenses commenced on September 6, 2000, and closed on September 21, 2000.[102] Of the 104 licenses auctioned, 96 licenses were sold to nine bidders. Five of these bidders were small businesses that won a total of 26 licenses. A second auction of 700 MHz Guard Band licenses commenced on February 13, 2001, and closed on February 21, 2001. All eight of the licenses auctioned were sold to three bidders. One of these bidders was a small business that won a total of two licenses.[103]

28. *Air-Ground Radiotelephone Service*. The Commission has previously used the SBA's small business size standard applicable to Wireless Telecommunications Carriers (except Satellite), *i.e.*, an entity employing no more than 1,500 persons.[104] There are fewer than 10 licensees in the Air-Ground Radiotelephone Service, and under that definition, we estimate that almost all of them qualify as small entities under the SBA definition. For purposes of assigning Air-Ground Radiotelephone Service licenses through competitive bidding, the Commission has defined "small business" as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding $40 million.[105] A "very small business" is defined as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding $15 million.[106] These definitions were approved by the SBA.[107] In May 2006, the Commission completed an auction of nationwide commercial Air-Ground Radiotelephone Service licenses in the 800 MHz band (Auction No. 65). On June 2, 2006, the auction closed with two winning bidders winning two Air-Ground Radiotelephone Services licenses. Neither of the winning bidders claimed small business status.

29. AWS Services (1710–1755 MHz and 2110–2155 MHz bands (AWS-1); 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz bands (AWS-2); 2155–2175 MHz band (AWS-3)). For the AWS-1 bands, the Commission has defined a "small business" as an entity with average annual gross revenues for the preceding three years not exceeding $40 million, and a "very small business" as an entity with average annual gross revenues for the preceding three years not exceeding $15 million.[108] In 2006, the Commission conducted its first auction of AWS-1 licenses.[109] In that initial

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[100] *See id.*

[101] *See id.* at 5343, para. 108 n.246 (for the 746–764 MHz and 776–794 MHz bands, the Commission is exempt from 15 U.S.C. § 632, which requires Federal agencies to obtain SBA approval before adopting small business size standards).

[102] *See 700 MHz Guard Bands Auction Closes: Winning Bidders Announced*, Public Notice, 15 FCC Rcd 18026 (WTB 2000).

[103] *See 700 MHz Guard Bands Auction Closes: Winning Bidders Announced*, Public Notice, 16 FCC Rcd 4590 (WTB 2001).

[104] 13 C.F.R. § 121.201, NAICS codes 517210.

[105] *Amendment of Part 22 of the Commission's Rules to Benefit the Consumers of Air-Ground Telecommunications Services et al.*, Order on Reconsideration and Report and Order, 20 FCC Rcd 19663, paras. 28–42 (2005).

[106] *Id.*

[107] *See* Letter from Hector V. Barreto, Administrator, SBA, to Gary D. Michaels, Deputy Chief, Auctions and Spectrum Access Division, Wireless Telecommunications Bureau, FCC (filed Sept. 19, 2005).

[108] *See* Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, *Report and Order*, 18 FCC Rcd 25,162, App. B (2003), *modified by* Service Rules for Advanced Wireless Services In the 1.7 GHz and 2.1 GHz Bands, *Order on Reconsideration*, 20 FCC Rcd 14,058, App. C (2005).

[109] *See* "Auction of Advanced Wireless Services Licenses Scheduled for June 29, 2006; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments and Other Procedures for Auction No. 66," AU Docket No. 06-30, *Public Notice*, 21 FCC Rcd 4562 (2006) ("*Auction 66 Procedures Public Notice*").

AWS-1 auction, 31 winning bidders identified themselves as very small businesses.[110] Twenty-six of the winning bidders identified themselves as small businesses.[111] In a subsequent 2008 auction, the Commission offered 35 AWS-1 licenses.[112] Four winning bidders identified themselves as very small businesses, and three of the winning bidders identified themselves as a small business.[113]For AWS-2 and AWS-3, although we do not know for certain which entities are likely to apply for these frequencies, we note that the AWS-1 bands are comparable to those used for cellular service and personal communications service. The Commission has not yet adopted size standards for the AWS-2 or AWS-3 bands but has proposed to treat both AWS-2 and AWS-3 similarly to broadband PCS service and AWS-1 service due to the comparable capital requirements and other factors, such as issues involved in relocating incumbents and developing markets, technologies, and services.[114]

30. *3650–3700 MHz band*. In March 2005, the Commission released a *Report and Order and Memorandum Opinion and Order* that provides for nationwide, non-exclusive licensing of terrestrial operations, utilizing contention-based technologies, in the 3650 MHz band (*i.e.*, 3650–3700 MHz).[115] As of April 2010, more than 1270 licenses have been granted and more than 7433 sites have been registered. The Commission has not developed a definition of small entities applicable to 3650–3700 MHz band nationwide, non-exclusive licensees. However, we estimate that the majority of these licensees are Internet Access Service Providers (ISPs) and that most of those licensees are small businesses.

31. *Fixed Microwave Services.* Microwave services include common carrier,[116] private-operational fixed,[117] and broadcast auxiliary radio services.[118] They also include the Local Multipoint Distribution Service (LMDS),[119] the Digital Electronic Message Service (DEMS),[120] and the 24 GHz Service,[121] where licensees can choose between common carrier and non-common carrier status.[122] The

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[110] *See* "Auction of Advanced Wireless Services Licenses Closes; Winning Bidders Announced for Auction No. 66," *Public Notice*, 21 FCC Rcd 10,521 (2006) ("*Auction 66 Closing Public Notice*").

[111] *See id.*

[112] *See AWS-1 and Broadband PCS Procedures Public Notice*, 23 FCC Rcd at 7499. Auction 78 also included an auction of broadband PCS licenses.

[113] *See* "Auction of AWS-1 and Broadband PCS Licenses Closes, Winning Bidders Announced for Auction 78, Down Payments Due September 9, 2008, FCC Forms 601 and 602 Due September 9, 2008, Final Payments Due September 23, 2008, Ten-Day Petition to Deny Period," *Public Notice*, 23 FCC Rcd 12,749 (2008).

[114] Service Rules for Advanced Wireless Services in the 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz Bands et al., *Notice of Proposed Rulemaking*, 19 FCC Rcd 19,263, App. B (2005); Service Rules for Advanced Wireless Services in the 2155–2175 MHz Band, *Notice of Proposed Rulemaking*, 22 FCC Rcd 17,035, App. (2007); Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, *Further Notice of Proposed Rulemaking*, 23 FCC Rcd 9859, App. B (2008).

[115] The service is defined in section 90.1301 *et seq*. of the Commission's Rules, 47 C.F.R. § 90.1301 *et seq*.

[116] *See* 47 C.F.R. Part 101, Subparts C and I.

[117] *See* 47 C.F.R. Part 101, Subparts C and H.

[118] Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission's Rules. *See* 47 C.F.R. Part 74. Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

[119] *See* 47 C.F.R. Part 101, Subpart L.

[120] *See* 47 C.F.R. Part 101, Subpart G.

[121] *See id.*

Commission has not yet defined a small business with respect to microwave services. For purposes of the IRFA, the Commission will use the SBA's definition applicable to Wireless Telecommunications Carriers (except satellite)—i.e., an entity with no more than 1,500 persons is considered small.[123] For the category of Wireless Telecommunications Carriers (except Satellite), Census data for 2007, which supersede data contained in the 2002 Census, show that there were 1,383 firms that operated that year.[124] Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees. Thus under this category and the associated small business size standard, the majority of firms can be considered small. The Commission notes that the number of firms does not necessarily track the number of licensees. The Commission estimates that virtually all of the Fixed Microwave licensees (excluding broadcast auxiliary licensees) would qualify as small entities under the SBA definition.

32. *Local Multipoint Distribution Service.* Local Multipoint Distribution Service (LMDS) is a fixed broadband point-to-multipoint microwave service that provides for two-way video telecommunications.[125] In the 1998 and 1999 LMDS auctions,[126] the Commission defined a small business as an entity that has annual average gross revenues of less than $40 million in the previous three calendar years.[127] Moreover, the Commission added an additional classification for a "very small business," which was defined as an entity that had annual average gross revenues of less than $15 million in the previous three calendar years.[128] These definitions of "small business" and "very small business" in the context of the LMDS auctions have been approved by the SBA.[129] In the first LMDS auction, 104 bidders won 864 licenses. Of the 104 auction winners, 93 claimed status as small or very small businesses. In the LMDS re-auction, 40 bidders won 161 licenses. Based on this information, the Commission believes that the number of small LMDS licenses will include the 93 winning bidders in the first auction and the 40 winning bidders in the re-auction, for a total of 133 small entity LMDS providers as defined by the SBA and the Commission's auction rules.

33. *Broadband Radio Service and Educational Broadband Service.* Broadband Radio Service systems, previously referred to as Multipoint Distribution Service (MDS) and Multichannel Multipoint Distribution Service (MMDS) systems, and "wireless cable," transmit video programming to subscribers and provide two-way high speed data operations using the microwave frequencies of the Broadband Radio Service (BRS) and Educational Broadband Service (EBS) (previously referred to as the Instructional Television Fixed Service (ITFS)).[130] In connection with the 1996 BRS auction, the

(Continued from previous page)

[122] *See* 47 C.F.R. §§ 101.533, 101.1017.

[123] 13 C.F.R. § 121.201, NAICS code 517210.

[124] *See* U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en (last visited May 11, 2011).

[125] *See* Local Multipoint Distribution Service, *Second Report and Order*, 12 FCC Rcd 12545 (1997).

[126] The Commission has held two LMDS auctions: Auction 17 and Auction 23. Auction No. 17, the first LMDS auction, began on February 18, 1998, and closed on March 25, 1998. (104 bidders won 864 licenses.) Auction No. 23, the LMDS re-auction, began on April 27, 1999, and closed on May 12, 1999. (40 bidders won 161 licenses.)

[127] *See LMDS Order,* 12 FCC Rcd at 12545.

[128] *Id.*

[129] *See* Letter to Daniel Phythyon, Chief, Wireless Telecommunications Bureau (FCC) from A. Alvarez, Administrator, SBA (January 6, 1998).

[130] *Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service and Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, MM Docket No. 94-131, PP Docket No. 93-253, Report and Order, 10 FCC Rcd 9589, 9593, para. 7 (1995).

Commission established a small business size standard as an entity that had annual average gross revenues of no more than $40 million in the previous three calendar years.[131] The BRS auctions resulted in 67 successful bidders obtaining licensing opportunities for 493 Basic Trading Areas (BTAs). Of the 67 auction winners, 61 met the definition of a small business. BRS also includes licensees of stations authorized prior to the auction. At this time, we estimate that of the 61 small business BRS auction winners, 48 remain small business licensees. In addition to the 48 small businesses that hold BTA authorizations, there are approximately 392 incumbent BRS licensees that are considered small entities.[132] After adding the number of small business auction licensees to the number of incumbent licensees not already counted, we find that there are currently approximately 440 BRS licensees that are defined as small businesses under either the SBA or the Commission's rules. In 2009, the Commission conducted Auction 86, the sale of 78 licenses in the BRS areas.[133] The Commission offered three levels of bidding credits: (i) a bidder with attributed average annual gross revenues that exceed $15 million and do not exceed $40 million for the preceding three years (small business) will receive a 15 percent discount on its winning bid; (ii) a bidder with attributed average annual gross revenues that exceed $3 million and do not exceed $15 million for the preceding three years (very small business) will receive a 25 percent discount on its winning bid; and (iii) a bidder with attributed average annual gross revenues that do not exceed $3 million for the preceding three years (entrepreneur) will receive a 35 percent discount on its winning bid.[134] Auction 86 concluded in 2009 with the sale of 61 licenses.[135] Of the ten winning bidders, two bidders that claimed small business status won 4 licenses; one bidder that claimed very small business status won three licenses; and two bidders that claimed entrepreneur status won six licenses.

34. In addition, the SBA's Cable Television Distribution Services small business size standard is applicable to EBS. There are presently 2,032 EBS licensees. All but 100 of these licenses are held by educational institutions. Educational institutions are included in this analysis as small entities.[136] Thus, we estimate that at least 1,932 licensees are small businesses. Since 2007, Cable Television Distribution Services have been defined within the broad economic census category of Wired Telecommunications Carriers; that category is defined as follows: "This industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies."[137] The SBA has developed a small business size standard for this category, which is: all such firms having 1,500 or fewer employees. To gauge small business prevalence for these cable services we must, however, use the most current census data that are based on the previous category of Cable and

[131] 47 C.F.R. § 21.961(b)(1).

[132] 47 U.S.C. § 309(j). Hundreds of stations were licensed to incumbent MDS licensees prior to implementation of Section 309(j) of the Communications Act of 1934, 47 U.S.C. § 309(j). For these pre-auction licenses, the applicable standard is SBA's small business size standard of 1500 or fewer employees.

[133] *Auction of Broadband Radio Service (BRS) Licenses, Scheduled for October 27, 2009, Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 86*, Public Notice, 24 FCC Rcd 8277 (2009).

[134] *Id.* at 8296.

[135] *Auction of Broadband Radio Service Licenses Closes, Winning Bidders Announced for Auction 86, Down Payments Due November 23, 2009, Final Payments Due December 8, 2009, Ten-Day Petition to Deny Period*, Public Notice, 24 FCC Rcd 13572 (2009).

[136] The term "small entity" within SBREFA applies to small organizations (nonprofits) and to small governmental jurisdictions (cities, counties, towns, townships, villages, school districts, and special districts with populations of less than 50,000). 5 U.S.C. §§ 601(4)–(6). We do not collect annual revenue data on EBS licensees.

[137] *See* U.S. Census Bureau, 2007 NAICS Definitions, "517110 Wired Telecommunications Carriers," (partial definition), www.census.gov/naics/2007/def/ND517110.HTM#N517110 (last visited May 11, 2011).

Other Program Distribution and its associated size standard; that size standard was: all such firms having $13.5 million or less in annual receipts.[138] According to Census Bureau data for 2002, there were a total of 1,191 firms in this previous category that operated for the entire year.[139] Of this total, 1,087 firms had annual receipts of under $10 million, and 43 firms had receipts of $10 million or more but less than $25 million.[140] Thus, the majority of these firms can be considered small.

5. Satellite Service Providers

35. *Satellite Telecommunications Providers. Two* economic census categories address the satellite industry. The first category has a small business size standard of $15 million or less in average annual receipts, under SBA rules.[141] The second has a size standard of $25 million or less in annual receipts.[142]

36. The category of Satellite Telecommunications "comprises establishments primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications."[143] Census Bureau data for 2007 show that 512 Satellite Telecommunications firms that operated for that entire year.[144] Of this total, 464 firms had annual receipts of under $10 million, and 18 firms had receipts of $10 million to $24,999,999.[145] Consequently, the Commission estimates that the majority of Satellite Telecommunications firms are small entities that might be affected by our action.

37. The second category, *i.e.*, "All Other Telecommunications" comprises "establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or Voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry."[146] For this category, Census Bureau data for 2007 show that there were a total of 2,383 firms that operated for the entire year.[147] Of this total, 2,346 firms had annual receipts of under $25

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[138] 13 C.F.R. § 121.201, NAICS code 517110.

[139] *See* U.S. Census Bureau, 2002 Economic Census, Subject Series: Information, tbl. 4, Receipts Size of Firms for the United States: 2002, NAICS code 517510 (rel. Nov. 2005).

[140] *Id*. An additional 61 firms had annual receipts of $25 million or more.

[141] 13 C.F.R. § 121.201, NAICS code 517410.

[142] 13 C.F.R. § 121.201, NAICS code 517919.

[143] *See* U.S. Census Bureau, 2007 NAICS Definitions, "517410 Satellite Telecommunications.

[144] *See* http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en (last visited May 11, 2011).

[145] *Id.*

[146] *See* http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517919&search=2007%20NAICS%20Search (last visited May 11, 2011).

[147] *See* http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en (last visited May 11, 2011).

million and 37 firms had annual receipts of $25 million to $49, 999,999.[148] Consequently, the Commission estimates that the majority of All Other Telecommunications firms are small entities that might be affected by our action.

6. Cable Service Providers

38. Because Section 706 requires us to monitor the deployment of broadband regardless of technology or transmission media employed, we anticipate that some broadband service providers may not provide telephone service. Accordingly, we describe below other types of firms that may provide broadband services, including cable companies, MDS providers, and utilities, among others.

39. *Wired Telecommunications Carriers*. The 2007 North American Industry Classification System ("NAICS") defines "Wired Telecommunications Carriers" as follows: "This industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies. Establishments in this industry use the wired telecommunications network facilities that they operate to provide a variety of services, such as wired telephony services, including VoIP services; wired (cable) audio and video programming distribution; and wired broadband Internet services. By exception, establishments providing satellite television distribution services using facilities and infrastructure that they operate are included in this industry."[149] The SBA has developed a small business size standard for wireline firms within the broad economic census category, "Wired Telecommunications Carriers."[150] Under this category, the SBA deems a wireline business to be small if it has 1,500 or fewer employees. Census data for 2007, which supersede data from the 2002 Census, show that 3,188 firms operated n 2007 as Wired Telecommunications Carriers. 3,144 had 1,000 or fewer employees, while 44 operated with more than 1,000 employees.[151]

40. *Cable Companies and Systems.* The Commission has also developed its own small business size standards, for the purpose of cable rate regulation. Under the Commission's rules, a "small cable company" is one serving 400,000 or fewer subscribers nationwide.[152] Industry data indicate that all but ten cable operators nationwide are small under this size standard.[153] In addition, under the Commission's rules, a "small system" is a cable system serving 15,000 or fewer subscribers.[154] Industry data indicate that, of 6,101 systems nationwide, 4,410 systems have under 10,000 subscribers, and an additional 258 systems have 10,000-19,999 subscribers.[155] Thus, under this standard, most cable systems are small.

41. *Cable System Operators*. The Communications Act of 1934, as amended, also contains a size

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[148] *See* http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en (last visited May 11, 2011).

[149] *See* U.S. Census Bureau, 2007 NAICS Definitions, "517110 Wired Telecommunications Carriers," http://www.census.gov/naics/2007/def/ND517110.HTM#N517110 (last visited May 11, 2011).

[150] 13 C.F.R. § 121.201 (NAICS code 517110).

[151] *See* http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en (last visited May 11, 2011).

[152] 47 C.F.R. § 76.901(e). The Commission determined that this size standard equates approximately to a size standard of $100 million or less in annual revenues. *Implementation of Sections of the 1992 Cable Act: Rate Regulation,* Sixth Report and Order and Eleventh Order on Reconsideration, 10 FCC Rcd 7393, 7408 (1995).

[153] *See* BROADCASTING & CABLE YEARBOOK 2010 at C-2 (2009) (data current as of Dec. 2008).

[154] 47 C.F.R. § 76.901(c).

[155] *See* TELEVISION & CABLE FACTBOOK 2009 at F-2 (2009) (data current as of Oct. 2008). The data do not include 957 systems for which classifying data were not available.

standard for small cable system operators, which is "a cable operator that, directly or through an affiliate, serves in the aggregate fewer than 1 percent of all subscribers in the United States and is not affiliated with any entity or entities whose gross annual revenues in the aggregate exceed $250,000,000."[156] The Commission has determined that an operator serving fewer than 677,000 subscribers shall be deemed a small operator, if its annual revenues, when combined with the total annual revenues of all its affiliates, do not exceed $250 million in the aggregate.[157] Industry data indicate that, of 1,076 cable operators nationwide, all but ten are small under this size standard.[158] We note that the Commission neither requests nor collects information on whether cable system operators are affiliated with entities whose gross annual revenues exceed $250 million,[159] and therefore we are unable to estimate more accurately the number of cable system operators that would qualify as small under this size standard.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

42. The rules proposed in this *NPRM* would require broadband backbone Internet service providers to report those outages that: (1) last at least 30 minutes, and (2) meet or exceed a proposed specified technical threshold. The rules proposed also would require interconnected VoIP service providers and broadband Internet access service providers to report those outages that: (1) last at least 30 minutes, (2) meet or exceed a proposed specified technical threshold, and (3) affect at least 900,000 user minutes. Under the Commission's current outage reporting rules, which apply only to legacy circuit-switched voice and/or paging communications over wireline, wireless, cable, and satellite communications services,[160] about11,000 outage reports per year from all reporting sources combined are filed with the Commission. As a result of the proposed of the rules, we anticipate that fewer than 2,000 additional outage reports will be filed annually. Hence, we estimate that if the proposed rules are adopted, the total number of reports from all outage reporting sources filed, pursuant to the current and proposed rules, combined would be fewer than 13,000 annually. We note that, occasionally, the proposed outage reporting requirements could require the use of professional skills, including legal and engineering expertise. As a consequence, we believe that in the usual case, the only burden associated with the proposed reporting requirements contained in this *NPRM* would be the time required to complete the initial and final reports. We anticipate that electronic filing, through the type of template that we are proposing (similar to the type that other service providers currently subject to outage reporting requirements are employing) should minimize the amount of time and effort that will be required to comply with the rules that we propose in this proceeding.

43. The *NPRM*'s proposal to require outage reporting would be useful in refining voluntary best practices and in developing new ones. In each case for the reporting thresholds proposed, we have chosen specific circumstances, applicable to the specific service that, in our view, warrant reporting as a significant outage, leading to FCC analysis and, possibly, the application of existing best practices or the development and refinement of best practices in the future. There may be additional thresholds that should also be included to improve the process of developing and improving best practices. We encourage interested parties to address these issues in the context of the applicable technologies and to

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[156] 47 U.S.C. § 543(m)(2); *see* 47 C.F.R. § 76.901(f) & nn. 1–3.

[157] 47 C.F.R. § 76.901(f); *see FCC Announces New Subscriber Count for the Definition of Small Cable Operator*, Public Notice, 16 FCC Rcd 2225 (Cable Services Bureau 2001).

[158] *See* BROADCASTING & CABLE YEARBOOK 2006, at A-8, C-2 (Harry A. Jessell ed., 2005) (data current as of June 30, 2005); TELEVISION & CABLE FACTBOOK 2006, at D-805 to D-1857 (Albert Warren ed., 2005).

[159] The Commission does receive such information on a case-by-case basis if a cable operator appeals a local franchise authority's finding that the operator does not qualify as a small cable operator pursuant to § 76.901(f) of the Commission's rules. *See* 47 C.F.R. § 76.909(b).

[160] *See* 47 C.F.R. § 4.3.

develop their comments in the context of the ways in which the proposed information collection would facilitate best practices development and increased communications security, reliability and resiliency throughout the United States and its Territories.

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

44. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include (among others) the following four alternatives: (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.[161]

45. Over the past decade, the proportion of communications services provided over a broadband platform has increased substantially, and our Nation increasingly relies on broadband-based services not only for day-to-day consumer use but also for Homeland Defense and National Security. Over the past three years, the number of outages reported each year has remained relatively steady at about 11,000. We believe that the proposed outage reporting requirements are the minimum necessary to assure that we receive adequate information to perform our statutory responsibilities with respect to 9-1-1 services and ensure the reliability of communications and critical infrastructures. Also, we believe that the magnitude of the outages needed to trigger the proposed reporting requirements (*e.g.,* outages of at least 30 minutes duration that potentially affect at least 900,000 user minutes) are sufficiently high as to make it unlikely that small businesses would be impacted significantly by the proposed rules. We also believe the choice of performance-based, as opposed to design-based, degradation characteristics (*e.g.*, packet loss, round-trip latency, and jitter) and the corresponding thresholds chosen to trigger the outage reporting will not unduly burden smaller entities. We have also carefully considered the notion of a waiver for small entities from coverage of the proposed rules, but declined to propose one, as a waiver of this type would unduly frustrate the purpose of the proposed requirements and run counter to the objectives of the *NPRM*. Further, we believe that the proposed requirement that outage reports be filed electronically would significantly reduce the burdens and costs currently associated with manual filing processes.

46. The proposed rules in the *NPRM* are generally consistent with current industry practices, so the costs of compliance should be small. For a number of reasons, we believe that the costs of the reporting rules that we propose in the *NPRM* are outweighed by the expected benefits of being able to ensure communications reliability that we fully expect would result due to learning about the reasons that outages are occurring, which would take place as a consequence of the proposed requirements' reporting. We have excluded from the proposed requirements any type of competitively sensitive information, information that would compromise network security, and information that would undermine the efficacy of reasonable network management practices. We anticipate that the record will suggest alternative ways in which the Commission could increase the overall benefits for, and lessen the overall burdens on, small entities.

47. We ask parties to include comments on possible alternatives that could satisfy the aims of the proceeding in a less costly, less burdensome, and/or more effective manner, and to comment on the sources of legal authority for the proposal assuming the Commission were to decide to adopt the proposal. Moreover, we also seek comments on an analysis of the costs, burdens, and benefits of the various proposed rules set forth in this proceeding. We ask commenters to address particularly the following concerns: What are the costs, burdens, and benefits associated with any proposed rule? Entities, especially small businesses and small entities, more generally, are encouraged to quantify the costs and benefits of the proposed reporting requirements. How could any proposed rule be tailored to impose the

[161] 5 U.S.C. § 603(c).

least cost and the least amount of burden on those affected? What potential regulatory approaches would maximize the potential benefits to society? To the extent feasible, what explicit performance objectives should the Commission specify? How can the Commission best identify alternatives to regulation, including fees, permits, or other non-regulatory approaches?

48. Further, comments are sought on all aspects of this proposal, including the proposed extension of such requirements, the definitions and proposed reporting thresholds, and the proposed reporting process that would follow essentially the same approach that currently applies to outage reporting on legacy services. We ask that parties include in their comments whether the proposed rules would satisfy the Commission's intended aims, described herein, and would promote the reliability, resiliency and security of interconnected VoIP, broadband Internet access, and broadband backbone Internet services that support 9-1-1 communications. We also ask for comments on our tentative conclusions that: expanding Part 4 outage reporting requirements to interconnected VoIP service providers and broadband ISPs would allow the Commission to analyze outages of the services that they provide; would provide an important tool for network operators to prevent future outages; and would help to ensure the reliability of critical communications networks and services.

49. In short, we welcome comments on: the proposed rules themselves; whether they would achieve their intended objectives; whether there are performance objectives not mentioned that we should address; whether better alternatives exist that would accomplish the proceeding's objectives; the legal authority to take the contemplated actions described herein; and the costs, burdens and benefits of our proposal.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rule

50. None.

STATEMENT OF
CHAIRMAN JULIUS GENACHOWSKI

Re: *Proposed Extension of Part 4 of the Commission's Rules Regarding Outage Reporting to Interconnected Voice Over Internet Protocol Service Providers and Broadband Internet Service Providers*, PS Docket No. 11-82

The recent devastating earthquake and tsunami in Japan as well as the severe tornadoes that ravaged our South two weeks ago are reminders of how vital our communications networks are to everyday life. They also remind us how important it is that our communications networks are reliable and resilient in emergencies.

When disaster strikes, the public must be able to make emergency calls to summon help, particularly those facing life-threatening situations.

The FCC, along with our federal, state, and local partners, has important responsibilities to ensure that our country's critical communications infrastructure remains working in times of crisis. Our current outage reporting requirements have been remarkably successful.

Within hours of Hurricane Katrina hitting land in 2005, the Commission's outage reporting data quickly became the federal government's best source of information about the conditions of critical communications infrastructure in the disaster area. This information improved first responders' situational awareness, helping them quickly understand the damage that had occurred and speed their response.

Our outage reporting requirements have also helped us make our nation's 9-1-1 system more reliable and resilient. Every day, more than 2 billion calls travel over America's communications network. Compiling and analyzing outage reporting information from these networks has helped refine industry best practices, which in turn has reduced the number of communications outages across several categories.

In the wireline category alone, our outage reporting requirements have reduced the estimated number of lost 9-1-1 calls by approximately 50 percent from their 2008 peak. Using reported information, Commission staff has been able to contact affected providers and establish data-driven collaboration.

The American communications landscape is changing. Unfortunately, our existing outage reporting requirements extend only to services delivered over legacy communications technologies – like traditional landline phones connected by copper wire – and not to service delivered over broadband platforms, like Voice over Internet Protocol (VoIP).

American consumers, businesses, and government increasingly rely on broadband networks and services, and broadband networks today carry a substantial volume of 9-1-1 traffic.
Since 2005, the Commission has required providers of interconnected VoIP services to supply 9-1-1 emergency calling capabilities to their customers as a mandatory feature of the service. Today, nearly thirty percent of residential calls are made over VoIP and other broadband-based platforms.

So, if Hurricane Katrina were to happen again, or if there was another attack on American soil, we simply wouldn't have the facts to ascertain the impact on our critical communications infrastructure. We wouldn't know if people could call their hospital, their fire station or their local police department to get help.

The Communications Act assigns the FCC important responsibilities with respect to public safety communications. Our proposal today is also about fulfilling the critical role that the Commission has been assigned in the Nation's emergency preparedness and response efforts. A Presidential Directive

directs the Commission to "ensure continuous operations and reconstitution of critical communications and services." A key component of living up to this responsibility is knowing when and where the communications infrastructure is not working.

The recent events in Japan confirm the importance of tracking and analyzing significant broadband outages. The March earthquake and tsunami not only killed or injured thousands of people in Japan, but also caused greater than $35 billion in property damage and extensive damage to Japanese communications networks.

The Ministry of Internal Affairs and Communications, the FCC's Japanese counterpart, collects information not only about significant wireline and wireless outages, but also broadband outages. Because of this, immediately after the disaster, the Ministry was able to determine that approximately 500,000 broadband circuits were disconnected or unavailable and take appropriate steps.

As we consider the record that develops, we will be mindful of constraints providers face – as we have for years while implementing our existing outage reporting requirements – while seeking deeper understanding of how outages can be minimized and emergency communications can be made more reliable.

These matters will become even more important as we transition to and implement Next Generation 9-1-1, which is a priority for this Commission. The rules proposed in this item will provide the FCC with better data to evaluate the current reliability of our 9-1-1 system, and strengthen our nation's entire communications infrastructure. They represent another delivery on the recommendations of the National Broadband Plan.

I thank the staff of our Public Safety and Homeland Security Bureau and Office of General Counsel for their excellent work on this item.

STATEMENT OF
COMMISSIONER MICHAEL J. COPPS

Re: *Proposed Extension of Part 4 of the Commission's Rules Regarding Outage Reporting to Interconnected Voice Over Internet Protocol Service Providers and Broadband Internet Service Providers*, PS Docket No. 11-82

Today we launch an important inquiry that recognizes the changing landscape of communications and its role in public safety, and in so doing we take another step toward fulfilling the recommendations of the National Broadband Plan. We're reminded again in recent weeks how critical communications are in times of crisis. Increasingly, we rely on IP-based services to make our emergency calls and to obtain critical information. A significant portion of our residential phone connections – more than a quarter, we are told – are now using interconnected VoIP, so there is no question just how much VoIP and broadband are on the front lines to protect citizens in this dangerous Twenty-first century world we all live in. Today's item addresses these changes.

Our current rules – limited to traditional voice services – have enabled critical outage analysis that in turn promotes industry best practices that ultimately – or at least hopefully – have led to fewer outages. So we salute past and ongoing industry efforts, knowing that service providers are concerned about the reliability and security of their most cutting-edge networks. To that end, I look forward to learning more about what they are doing on their own.

Today's item acknowledges the unique characteristics of these networks, and proposes to tailor outage reporting rules to those characteristics. While it's true that IP is designed to be "fault tolerant," we can – and have – seen outages that affect hundreds of thousands of people for hours at a time. So, in addition to network operators, I look forward to hearing from other stakeholders, including the public safety community, on where we should set the triggers for reporting.

Finally, this is not the first time that we have considered the ancillary authority route to take important steps to protect users of these services. I would be remiss if I didn't say this is not my preferred approach, and I hope that one day soon the Commission will look more broadly at the proper classification of Voice over Internet Protocol. Our charge to protect the safety of the American people is clear and should never have to hinge on semantics or distinctions without a difference. Nevertheless, I am hopeful that we will be able to find the support we need to take the necessary steps in this critical arena.

I want to thank the Chairman and Public Safety and Homeland Security Bureau for bringing us this Notice. It shows that we take seriously our charge as an agency with significant public safety responsibilities.

STATEMENT OF
COMMISSIONER ROBERT M. McDOWELL
APPROVING IN PART, CONCURRING IN PART

Re: *Proposed Extension of Part 4 of the Commission's Rules Regarding Outage Reporting to Interconnected Voice Over Internet Protocol Service Providers and Broadband Internet Service Providers*, *PS Docket No. 11-82*

My colleagues and I agree on the vital importance placed on voice calls to 9-1-1. All Americans rightly expect their emergency calls to go through, even though most may not understand the technologies involved, how the systems operate or their regulatory treatment. I am grateful to all of the commenters for sharing their important insights and marketplace experiences on this topic in response to the notice of inquiry initiated last April. And, I thank the Chairman for his willingness to accept edits that allow for meaningful comment on the Commission's authority to impose outage reporting requirements on broadband Internet service providers. In my view, we do not have Congress's authority to act as suggested.

On the other hand, I agree that if we are to have rules, the proper way to proceed is through a notice of proposed rulemaking containing the text of proposed rules. Again, I appreciate Chairman Genachowski's efforts on this front. Also, we are at the beginning of the rulemaking stage, final decisions have yet to be made, and the notice contains many questions on the matter of our jurisdiction, not to mention the scope of the proposal.

For these reasons, I am voting to approve this notice (and process), but I am concurring on the notice's discussion of the Commission's legal authority. Given the importance of the topic, I am entering this process with an open mind and look forward to learning more. As always, I thank our talented staff for their hard work and diligence.

STATEMENT OF
COMMISSIONER MIGNON L. CLYBURN

Re: *Proposed Extension of Part 4 of the Commission's Rules Regarding Outage Reporting to Interconnected Voice Over Internet Protocol Service Providers and Broadband Internet Service Providers, PS Docket No. 11-82*

With this Notice of Proposed Rulemaking, the Commission takes an important step to improve our Nation's emergency preparedness. As the item explains, the President has assigned the FCC the mission essential function of ensuring continuous operation of critical communications services. Because hundreds of millions of Americans use broadband Internet service networks, and a growing number of Americans use interconnected VoIP services, these networks need to be at the top of the priority list when it comes to ensuring continued operations of critical services.

The proposed outage reporting requirements also enable the Commission to meet Congressional mandates. Section 615a-1 of the Communications Act gives the Commission authority to modify its regulations, when necessary, to ensure that IP-enabled voice service providers allow their customers to make 9-1-1 calls. Last year alone, there were a number of instances in which interconnected VoIP service customers lost service for several hours. In one case, a carrier experienced an outage in which more than one million customers lost interconnected VoIP service for more than four hours. In light of these experiences, it is appropriate to propose outage reporting requirements that allow the Commission to monitor whether interconnected VoIP providers are satisfying their statutory obligations. The reporting requirements will also promote the reliability of broadband Internet and interconnected VoIP networks, and allow us to satisfy statutory obligations, to promote the deployment of those networks.

I commend Chairman Genachowski and Admiral Jamie Barnett for their leadership in initiating this important proceeding.