

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

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| In the Matter of |) | |
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| 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 |
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REPORT AND ORDER

Adopted: February 15, 2012

Released: February 21, 2012

By the Commission: Chairman Genachowski and Commissioners McDowell and Clyburn issuing separate statements.

TABLE OF CONTENTS

| Heading | Paragraph # |
|-------------------------------------------------------------------------------------------------|-------------|
| I. INTRODUCTION AND SUMMARY | 1 |
| II. BACKGROUND | 10 |
| III. NEED FOR COLLECTING OUTAGE INFORMATION ON INTERCONNECTED VOIP SERVICE | 19 |
| A. Need for Requirement..... | 19 |
| 1. Proposal..... | 20 |
| 2. Comments..... | 21 |
| 3. Discussion..... | 22 |
| B. Mandatory or Voluntary Requirement..... | 37 |
| 1. Proposal..... | 38 |
| 2. Comments..... | 39 |
| 3. Discussion..... | 40 |
| C. Legal Authority to Require Reporting of Outages of Interconnection VoIP Service | 58 |
| D. Interconnected VoIP Service Providers – Outage Metrics and Thresholds | 68 |
| 1. Facilities-Based vs. Non-Facilities-Based Interconnected VoIP Services | 68 |
| 2. Definition of Outage of Interconnected VoIP Service | 75 |
| 3. Reporting Thresholds | 83 |
| 4. Reporting Process for Outages of Interconnected VoIP Service..... | 92 |
| E. Application of Part 4 Rules to Voice Service Provided Using New Wireless Spectrum Bands..... | 102 |
| 1. Clarification of Application of Part 4 | 103 |
| 2. Reporting Process..... | 108 |
| IV. SHARING OF INFORMATION AND CONFIDENTIALITY | 109 |
| V. CONTINUING VOLUNTARY DIALOGUE REGARDING INTERNET SERVICE PROVIDER OUTAGE ISSUES | 114 |
| VI. CONCLUSION | 115 |
| VII. PROCEDURAL MATTERS..... | 116 |

| | |
|----------------------------------------------------|-----|
| A. Accessible Formats | 116 |
| B. Final Regulatory Flexibility Analysis | 117 |
| C. Paperwork Reduction Act Analysis | 118 |
| D. Congressional Review Act..... | 119 |
| VIII. ORDERING CLAUSES | 120 |
| APPENDIX A - List of Commenting Parties | |
| APPENDIX B - Final Regulatory Flexibility Analysis | |
| APPENDIX C - Final Rules | |

I. INTRODUCTION AND SUMMARY

1. In this *Report and Order*, the Federal Communications Commission (FCC or Commission) extends the outage reporting requirements in Part 4 of our rules¹ only to interconnected Voice over Internet Protocol (VoIP) service providers.² In the *Notice of Proposed Rulemaking* in this proceeding,³ we proposed to take much broader action. Specifically, we proposed to extend Part 4 of the rules to both interconnected VoIP services and broadband Internet services. In addition, we proposed to require reporting of both outages based on the complete loss of service and those where, while service is technically available, technical conditions (such as packet loss, latency and/or jitter) effectively prevent communication. In response to the record developed in this proceeding, we are prepared at this time to adopt reporting requirements only with respect to the complete loss of interconnected VoIP service. Collecting this data will help the Commission help ensure the Nation's 9-1-1 systems are as reliable and resilient as possible and also allow us to monitor compliance with the statutory 9-1-1 obligations of interconnected VoIP service providers. At this time, we also defer action on possible performance degradation thresholds for measuring an outage of interconnected VoIP service and on all outages of broadband Internet service.

2. Consumers are increasingly using interconnected VoIP services in lieu of traditional telephone service.⁴ Interconnected VoIP services allow a wireline or wireless user generally to receive calls from and make calls to the legacy public telephone network, including calls to 9-1-1.⁵ As of December 31, 2010, 31 percent of the more than 87 million residential telephone subscriptions in the

¹ 47 C.F.R. Part 4.

² The rules we adopt today modify information collection to OMB No. 3060-0484 (approved Nov. 16, 1991). The Commission will issue a public notice announcing the effective date of the information collection after the Office of Management and Budget approves the modification.

³ See 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, *Notice of Proposed Rulemaking*, PS Docket No. 11-82, 26 FCC Rcd 7166 (2011) (*NPRM*).

⁴ See *Local Telephone Competition: Status as of December 31, 2010*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission (Oct. 2011), Figure 1 - Interconnected VoIP Subscriptions and Retail Switched Access Lines, 2008 - 2010, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2011/db1007/DOC-310264A1.pdf, (last visited Feb. 2, 2012). For example, during the period December 2008 to December 2010 residential and business interconnected VoIP subscriptions increased from 21,744,000 to 31,674,000 (+46 percent) while legacy residential and business telephone lines decreased from 141,019,000 to 116,898,000 (-17 percent).

⁵ Section 9.3 of the Commission's Rules defines "Interconnected 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." 47 C.F.R. § 9.3.

United States were provided by interconnected VoIP providers⁶—an increase of 21 percent (from 22.4 million to 27.1 million residential lines) in the last year.⁷ The public’s increased reliance on interconnected VoIP services is also reflected in 9-1-1 usage trends; we estimate that approximately 31 percent of residential wireline 9-1-1 calls are made using VoIP service.⁸

3. The availability and resilience of our communications infrastructure, specifically 9-1-1, directly impacts public safety and the ability of our first responders to fulfill their critical mission. The most practical, effective way to maintain emergency preparedness and readiness is to work continuously to minimize the incidence of routine outages.

4. The FCC’s public safety mission is one of our core functions, and “promoting safety of life and property” is a foundational reason for the creation of the Commission.⁹ More recently, Congress affirmed the Commission’s efforts to accomplish this mission by codifying the requirement for interconnected VoIP providers to provide 9-1-1 services.¹⁰

5. Consistent with our statutory mission, Presidential Directives and Executive Orders, and related implementing documents charge the Commission with ensuring the resilience and reliability of the Nation’s commercial and public safety communications infrastructure. National Security Presidential Directive/NSPD-51¹¹ establishes the framework by which the government can continue to perform its most critical roles during times of emergency.¹² Accordingly, the Commission has the responsibility to

⁶ See *Local Telephone Competition: Status as of December 31, 2010*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission (Oct. 2011), Figure 2 - Wireline Retail Local Telephone Service Connections by Technology and Customer Type as of December 31, 2010, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2011/db1007/DOC-310264A1.pdf (last visited Feb. 2, 2012).

⁷ See *Local Telephone Competition: Status as of December 31, 2009*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission (Jan. 2011), Figure 2 - Wireline Retail Local Telephone Service Connections by Technology and Customer Type as of December 31, 2009, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-304054A1.pdf. (last visited Feb. 2, 2012).

⁸ See *supra* notes 4-6. The FCC estimates that the percentage of residential wireline VoIP calls to 9-1-1 will be approximately equal to the percentage of residential wireline VoIP telephone subscriptions when compared to the total residential wireline telephone subscriptions. See *Local Telephone Competition: Status as of December 31, 2010*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission (Oct. 2011), Figure 2 - Wireline Retail Local Telephone Service Connections by Technology and Customer Type as of December 31, 2010, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2011/db1007/DOC-310264A1.pdf. (last visited Feb. 2, 2012). The FCC estimates that the percentage of residential wireline VoIP calls to 9-1-1 will be approximately equal to the ratio of residential wireline VoIP telephone subscriptions (27.061M) to the total residential wireline telephone subscriptions (87.088M), *i.e.*, 27.061M/87.088M or 31 percent.

⁹ See 47 U.S.C. § 151.

¹⁰ See 47 U.S.C. § 615a-1.

¹¹ National Security Presidential Directive 51 (NSPD 51), also known as Homeland Security Presidential Directive-20 (HSPD-20) (May 9, 2007), available at <http://www.fas.org/irp/offdocs/nspd/nspd-51.htm> (last visited Feb. 6, 2012).

¹² NSPD 51/HSPD-20 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 (continued....)

ensure continuous operations and reconstitution of critical communications and services.¹³ The Commission also plays an active role in Emergency Support Function 2 (ESF2),¹⁴ the communications branch of the National Response Framework,¹⁵ which guides the Nation's conduct during an all-hazards response. Executive Order 12472 establishing the National Communications System, 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.¹⁶

6. We have cause to be concerned about the ability of interconnected VoIP subscribers to reach emergency services when they need them. Several recent, significant VoIP outages highlight our concern about the availability of 9-1-1 over VoIP service:

- On May 25, 2010, according to press reports, a service outage involving the AT&T U-Verse platform involved a server failure that impacted U-Verse interconnected VoIP service in AT&T's entire 22-state local phone service area serving approximately 1.15 million customers. The reports indicate that the outage lasted for several hours. It remains unclear how many subscribers were unable to reach 9-1-1 and for how long.¹⁷
- On March 22, 2011, a Comcast outage in 19 New Hampshire communities beginning around 3:30 p.m. left many Comcast customers in those communities unable to make any calls, including 9-1-1 calls. The problem lasted through the evening.¹⁸
- In June 2010, CenturyLink Internet experienced failures that affected approximately 30,000 customers on the Kitsap Peninsula (near Seattle, Washington),¹⁹ and in a separate

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Federal Government services that address the health, safety and welfare needs of the United States. NSPD 51/HSPD-20 (May 4, 2007), ¶ 5.

¹³ See description of the Commission's work with respect to emergency communications: <http://www.fcc.gov/topic/emergency-communications> (last visited Feb. 13, 2012).

¹⁴ ESF2 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 Feb. 2, 2012).

¹⁵ The National Response Framework was developed by the U.S. Department of Homeland Security (DHS) pursuant to Homeland Security Presidential Directive-8 (HSPD-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 Presidential Directive-8 (Dec. 17, 2003), replaced by Presidential Policy Directive 8 (March 30, 2011), available at http://www.dhs.gov/xabout/laws/gc_1215444247124.shtm (last visited Feb. 6, 2012).

¹⁶ See *Amendment of Part 63 of the Commission's Rules to Provide for Notification by Common Carriers of Service Disruptions*, CC Docket No. 91-273, Report and Order, 7 FCC Rcd 2010, 2016-17 ¶¶ 33-34 (1992) (*1992 Part 4 Report and Order*).

¹⁷ See Mike Dolan *AT&T's VoIP suffers outage*, FierceVoIP, May 27, 2010, available at <http://www.fiercevoip.com/story/ts-voip-suffers-outage/2010-05-27> (last visited Feb. 7, 2012).

¹⁸ See TCMNet, *Phone outages leave 19 communities without 911 for hours*, March 23, 2011, available at <http://www.tcmnet.com/submit/2011/03/23/5396533.htm> (last visited Feb. 7, 2012).

¹⁹ See Derek Sheppard, *Internet Outages Frustrate Businesses, Web Surfers in North Kitsap*, Kitsap Sun, June 4, 2010, available at <http://www.kitsapsun.com/news/2010/jun/04/scattered-internet-outages-frustrate-businesses/> (last visited Feb. 7, 2012).

outage, affected approximately 100,000 customers across parts of Texas.²⁰ The Kitsap Peninsula outage lasted an hour according to company sources, but some customers said it lasted four times as long.²¹ 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 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.²² During the outage, local, state, and Federal government department and agency customers of Comcast in the affected areas were unable to make or receive telephone calls. Residential and business subscribers to Comcast Internet and Digital Voice services also were affected by the outage significantly impairing their ability to engage in 9-1-1 and other communications.

7. Commission staff gathered these facts from press accounts. None of these outages was reported directly to the Commission. The current outage reporting requirements are limited to traditional voice and paging communications services over wireline, wireless, cable, and satellite and do not apply to outages affecting interconnected VoIP services.²³ Obtaining outage information for interconnected VoIP service, however, is the most effective method for the Commission to know whether and how well providers are meeting their statutory obligation to provide 9-1-1 and Enhanced 9-1-1 (E9-1-1) service.²⁴ Further, without detailed information about outages that occur, the Commission is unable to analyze communications vulnerabilities, especially as they pertain to 9-1-1 services, or to share aggregate information with industry to help prevent future outages.

²⁰ See Dave Miller, *Century Link down across region*, Killeen Daily Herald, June 17, 2010, available at <http://www.kdhnews.com/news/story.aspx?s=42355> (last visited Feb. 7, 2012).

²¹ See infoTECH News, *Scattered Internet Outages Frustrate Businesses, Web Surfers in North Kitsap*, June 4, 2010, available at <http://it.tmcnet.com/news/2010/06/04/4828578.htm> (last visited Feb. 7, 2012).

²² See Fred Posner, *Comcast Outage and Phone Service Complaints*, VoIP Tech Chat, March 29, 2010, available at <http://www.voiptechchat.com/voip/431/comcast-outage-and-phone-service-complaints/> (last visited Feb. 7, 2012).

²³ See 47 C.F.R. §§ 4.1-4.13. In 1992, the Commission established network outage reporting requirements for wireline providers. *1992 Part 4 Report and Order* 7 FCC Rcd 2010 (1992); 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. *New Part 4 of the Commission's Rules Concerning Disruptions to Communications*, ET Docket No. 04-35, *2004 Part 4 Order and FNPRM*, 19 FCC Rcd 16830 (2004) (*2004 Part 4 Order and FNPRM*).

²⁴ Section 615a-1(a) of the Communications Act provides that

“[i]t shall be the duty of each IP-enabled voice service 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, as in effect on July 23, 2008 and as such requirements may be modified by the Commission from time to time.”

47 U.S.C. § 615a-1.

8. With the objective of ensuring the availability of 9-1-1 service, this Report and Order:
- extends the Commission’s mandatory outage reporting rules to facilities-based and non-facilities-based²⁵ interconnected VoIP service providers;
 - applies the current Part 4 definition of an outage to outages of interconnected VoIP service, covering the complete loss of service and/or connectivity to customers;
 - requires that these providers submit electronically a notification to the Commission within:
 - 240 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 that potentially affects a 9-1-1 special facility,²⁶ 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;
 - in this case, 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; or
 - 24 hours of discovering that these providers have experienced on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 30 minutes duration that:
 - potentially affects at least 900,000 user minutes of interconnected VoIP service and results in complete loss of service; or
 - potentially affects any special offices and facilities;²⁷
 - requires that these providers submit electronically a Final Communications Outage Report to the Commission not later than thirty days after discovering the outage; and
 - clarifies that the Part 4 rules apply to voice services provided using new wireless spectrum bands.

²⁵ See *Clarification of § 83.61 International Traffic Data Reporting Requirements*, 13 F.C.C.R. 12809, 12810 (Int. Bur. 2008) (defining “facilities-based” service as a service provided using channels of communication that the carrier owns, or in which the carrier has some other possessory interest, such as an indefeasible right of use (IRU) or a lease).

²⁶ See 47 C.F.R. § 4.5(e).

²⁷ See 47 C.F.R. § 4.5(b).

9. The outage reporting threshold that we adopt today for interconnected VoIP service is technology-neutral in that it mirrors the existing standard applied to other services covered under Part 4 of the Commission's rules. Furthermore, the reporting process adopted herein is quite similar to the current process. We recognize that requiring interconnected VoIP service providers to report even significant outages imposes a burden on them, but we have determined that the cost to these providers of implementing the rules adopted herein is justified by the overwhelming public benefit of a reliable 9-1-1 system and firmly grounded in the Commission's statutory obligation to ensure that reliability 9-1-1 service is provided to users of interconnected VoIP service. Finally, we decide to defer the question of outage reporting requirements for broadband Internet service providers and determine that this issue deserves further study.²⁸

II. BACKGROUND

10. The 9-1-1 system is part of the Nation's critical communications infrastructure. The Commission plays a key role ensuring that the communications network promotes public safety, including matters involving the national security and emergency preparedness of the United States.²⁹ Indeed, Congress established the Commission in part to promote the "safety of life and property."³⁰

11. To perform our statutory and administrative duties effectively, we need timely, accurate and longitudinal information about the nation's communications infrastructure. Since 1992, the Commission has required wireline providers to report major disruptions to their communications services.³¹ In 2004, the Commission extended reporting requirements to providers of wireless (including paging), cable, and satellite communications. With respect to wireless services, the Commission referred to communications that are provided using cellular architecture pursuant to Parts 22, 24 and 90 of the Rules, as well as CMRS paging services.³²

12. The current outage reporting process under Part 4 involves online submission of very basic information within two hours of discovering the existence of a reportable outage ("Notification"), additional information within 72 hours ("Initial Report"), and a more detailed description of the outage and cause(s) within thirty days ("Final Report").³³ The online submissions are made via the FCC's

²⁸ 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 Rule Making*, 26 FCC Rcd 7166, 7181 ¶ 31 (2011)(hereinafter *NPRM*).

²⁹ See Exec. Order No. 12,472, *Assignment of National Security and Emergency Preparedness Telecommunications Functions*, 49 Fed. Reg. 13471 (1984), as amended by Exec. Order 13,286, *Amendment of Executive Orders, and Other Actions, in Connection With the Transfer of Certain Functions to the Secretary of Homeland Security*, 68 Fed. Reg. 10619 (2003), and Exec. Order 13,407, *Public Alert and Warning System*, 71 Fed. Reg. 36975 (2006).

³⁰ See, e.g., 47 U.S.C. § 151.

³¹ See generally *1992 Part 4 Report and Order*.

³² See *2004 Part 4 Report and Order*, 19 FCC Rcd at 16922 at App. B. In addition, in 2005, the Commission sought comment on whether network outage reporting requirements should be extended to include broadband Internet access service providers, but no action was taken on the proposal. *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, CC Docket No. 02-33, *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).

³³ See 47 C.F.R. § 4.11. The Notification shall provide 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 by which the Commission's technical staff may contact the reporting entity. The Initial report shall contain all pertinent information then available on the outage. The Final report shall (continued...)

Network Outage Reporting System (NORS), a web-based filing system through which communications providers covered by the Part 4 reporting rules submit reports to the FCC. This system uses an electronic template to promote ease of reporting and encryption technology to ensure the security of the information filed.

13. The Commission uses outage information submitted pursuant to Part 4 of its rules to carry out our mission to promote “safety of life and property” and to fulfill our responsibilities under the Executive Orders describe above by identifying communication system vulnerabilities. Over the last six years, the Commission staff, working with communications providers, has been able to facilitate improved communications resiliency and emergency readiness. The Commission is uniquely positioned to do so. The outage reports identify issues that the Commission needs to address with individual providers whose reports reveal a need for improved reliability. But the Commission also monitors outage reports filed by all reporting providers to identify statistically meaningful trends. Because outage reports are presumed to be confidential,³⁴ no individual carrier, no matter how diligent or motivated, is positioned to perform that role. When Commission staff identifies a possible area of concern across providers, we gather providers together in coordinated efforts to improve security, reliability and resiliency. Where necessary, the Commission considers policy changes to address persistent problems. Over the years, this work has consistently resulted in reductions in the number of outages, as evidenced by a decrease in the number of outage reports filed. More important, the net decrease in the frequency of reported outages reflects an increase in the reliability of the communications infrastructure, which thereby leads to an increase in the availability of the public safety services that rely on the communications infrastructure. In short, as a result of reporting and our subsequent analysis, measureable reliability improvements have been achieved, and reporting has led to improvements in the engineering, provisioning, and deployment of communications infrastructure and services.³⁵

14. In addition, sharing aggregated outage information with providers nationwide has led to the development and refinement of industry best practices, which, in turn, has reduced the number of communications outages. Industry stakeholders and others have recognized the value of these data.³⁶ For example, wireline outages spiked in 2008, decreasing the reliability of 9-1-1 services. Through ongoing, systematic analysis of monthly wireline outages and subsequent work by the Commission and industry groups, such as the Network Reliability Steering Committee (NRSC)³⁷ and the National Emergency

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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.

³⁴ See 47 C.F.R. §4.2.

³⁵ See Network Reliability Steering Committee Annual Report 2004 (Oct. 2005), *available at* http://www.atis.org/NRSC/Docs/2004_Annual_Report.pdf (last visited Feb. 2, 2012).

³⁶ See Network Reliability Steering Committee 2008-2009 Biennial Report (Apr. 2010), *available at* <http://www.atis.org/nrsc/Docs/ATIS-0100029%20-%20NRSC%20Biennial%20Report.pdf> (last visited Feb. 2, 2012).

³⁷ The Alliance for Telecommunications Industry Solutions (ATIS) Network Reliability Steering Committee (NRSC) is the steering committee of the Network Reliability Council (NRC), which was formed in 1992 to bring together leaders of the telecommunications industry and telecommunications experts from academic and consumer organizations to explore and recommend measures that would enhance network reliability. A key method by which the NRSC accomplishes its work is through coordination with Commission staff on issues identified through analysis of NORS reports and other incidents. The NRSC currently includes nine major wireline and wireless carriers and the National Communications System. When network reliability issues are identified, often through the (continued...)

Number Association (NENA), the Commission and industry were able to understand the root causes of this trend, ultimately resulting in the application of improved industry practices that reduced the estimated number of lost 9-1-1 calls by 40 percent. Such dramatic reductions would not have been possible without this bigger picture of industry network reliability made possible by reporting and the sharing of outage data among Commission and industry experts.³⁸

15. Unlike legacy service providers, interconnected VoIP service providers are not covered by the Commission's current outage reporting rules.³⁹ As a result, the Commission is constrained in its ability to bring interconnected VoIP providers into this process of continual evaluation and improvement. The Communications Act and Commission rules do impose 9-1-1-related obligations on interconnected VoIP service providers. 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, including relaying Automatic Number Identification (ANI) and the caller's Registered Location to the PSAP, designated statewide default answering point, or appropriate local emergency authority.⁴⁰ And 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.⁴¹

16. Outages to interconnected VoIP service providers negatively affect the ability of interconnected VoIP service providers to meet basic and enhanced 9-1-1 service obligations because, whether or not facilities-based, interconnected VoIP service providers, their 9-1-1 calls are typically established⁴² using the standard Session Initiation Protocol (SIP),⁴³ which does not distinguish between 9-1-1 and other calls. The 9-1-1 call may transit a broadband Internet access service provider and a broadband backbone Internet service provider in order to reach the non-facilities-based interconnected VoIP service provider's 9-1-1 database for routing instructions to reach the caller's nearest PSAP. The inability of SIP to distinguish between 9-1-1 and non-emergency interconnected VoIP calls means that outage reporting for all aspects of interconnected VoIP connectivity is necessary to understand and ensure the reliability of 9-1-1 VoIP calls.

17. The outage information received from interconnected VoIP service providers will help the Commission determine the magnitude of their impact on the nationwide 9-1-1 system, whether action can be taken immediately to help providers recover and prevent future outages, and ensure, to the extent

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Commission's analysis of NORS reports, the NRSC will constitute a team to review the issue and recommend best practices and solutions. See <http://www.atis.org/nrsc/index.asp> (last visited Feb. 2, 2012).

³⁸ ATIS, NRSC Bulletin No. 2009-006 Wireline Outages (Oct. 2009).

³⁹ See 47 C.F.R. §§ 4.1-4.13. The Commission's current outage reporting requirements are limited to traditional voice and paging communications services over wireline, wireless, cable, and satellite and do not apply to outages affecting interconnected VoIP service providers. See *supra* note 23 and accompanying text.

⁴⁰ *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*). See 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.

⁴¹ New and Emerging Technologies 9-1-1 Improvement Act of 2008, Pub. L. No. 110-283, 122 Stat. 2620 (2008) (NET 911 Improvement Act of 2008).

⁴² See <http://ir.vonage.com/releasedetail.cfm?ReleaseID=194444> (last visited Feb. 2, 2012).

⁴³ Session Initiation Protocol (SIP) is a signaling protocol for creating, modifying, and terminating VoIP sessions with one or more participants. See <http://www.ietf.org/rfc/rfc3261.txt> (last visited Feb. 2, 2012).

possible, that the various VoIP services are prepared for natural and man-made disasters. Such information will allow the Commission to use the same successful process it currently uses with providers of legacy services to refine and develop best practices that will help enhance the reliability of interconnected VoIP service in emergency situations. We expect that the reports will enable the Commission staff, in conjunction with industry, to analyze patterns of interconnected VoIP service outage on an industry-wide basis, in a manner that will lead to measurably improved reliability and outage reductions that have been achieved to date using data from NORS.⁴⁴ These benefits will become increasingly important as the use of interconnected VoIP service grows.⁴⁵

18. The *National Broadband Plan* recommended that the Commission extend the Part 4 outage reporting rules to include, *inter alia*, interconnected VoIP service providers,⁴⁶ and in July 2010, the Public Safety and Homeland Security Bureau (Bureau) sought comment in a *Public Notice* on extending the Part 4 rules to interconnected VoIP services.⁴⁷ On May 13, 2011, the Commission adopted a *Notice of Proposed Rulemaking* seeking comment on, *inter alia*, extending Part 4 to these services.⁴⁸ On September 8, 2011, the Bureau held a public workshop that addressed this subject.⁴⁹

⁴⁴ The Massachusetts Department of Telecommunications and Cable (MDTC) sees similar benefits, believing the FCC's extending outage reporting requirements will "benefit more than 1 million Massachusetts residential and business subscribers of interconnected VoIP services and more than 2.5 million Massachusetts Internet broadband households." Comments of MDTC at 2. The MDTC maintains that by extending outage reporting requirements to interconnected VoIP providers, the FCC may better enforce existing E-9-1-1 obligations and analyze root causes of outages, which will improve the overall communications network performance." *Id.* at 3. Uffe-Holst Jensen, Councillor, European Commission, explained that the European Union adopted a 2009 Directive, which includes an obligation for outage reporting (on telephone voice-fixed networks, data services, satellite communications, fixed networks, and wireless broadcast services) because "It is important to have some kind of minimum standards . . . [T]o ensure that what we [In the European Union] achieve the most competitive knowledge-based economy. . . . we need to be sure that the telecom services are reliable, and are available. So we need to have a set of minimum standards for the Member States. And it goes into the overall competitiveness of the European Union . . .". Directive 2009/140/EC of the European Parliament and of the Council, chapter IIIa, art. 13(a)(3) (Nov. 25, 2009)(Directive), available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0037:01:EN:HTML> (last visited Feb. 2, 2012).

⁴⁵ This view is shared by observers not just in this country, but in other countries with advance communications networks as well. Masaru Fujino, Counselor, Embassy of Japan in USA, Ministry of Foreign Affairs of Japan, recently said the following about the need for outage information: "And [in Japan] we are more and more dependent on the IP networks, both for . . . public education and for the emergency calls. So it is quite essential in Japan for us, too, to get the information on the IP networks." Workshop/Webinar on Proposed Extension of Outage Reporting and on Network Reliability and Continuity, Washington, DC, September 8, 2011, at 57 (*FCC Workshop*).

⁴⁶ Omnibus Broadband Initiative, *Connecting America: The National Broadband Plan* (Recommendation 16.6, Mar. 2010) (*NBP*), available at <http://www.broadband.gov/plan/national-broadband-plan-action-agenda.pdf> (last visited Feb. 2, 2012).

⁴⁷ See generally *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*, ET Docket No. 04-35, *Public Notice*, 25 FCC Rcd 8490 (2010) (*PSHSB PN*).

⁴⁸ *NPRM*, 26 FCC Rcd at 7167.

⁴⁹ Workshop/Webinar on Proposed Extension of Outage Reporting and on Network Reliability and Continuity, Washington, DC, September 8, 2011 (*FCC Workshop*).

III. NEED FOR COLLECTING OUTAGE INFORMATION ON INTERCONNECTED VOIP SERVICE

A. Need for Requirement

19. As set forth below, we conclude that significant outages of interconnected VoIP service should be reported to the Commission.

1. Proposal

20. In the *NPRM*, we proposed, *inter alia*, to extend the Part 4 outage reporting requirements to include both facilities-and non-facilities-based interconnected VoIP services.⁵⁰ The Commission recognized that monitoring and analysis of outages is needed in light of increasing evidence that major VoIP service outages are occurring⁵¹ and given that such outages may disable 9-1-1 and other service capabilities. Further, because there currently are no Commission requirements to report such outages, the Commission recognized that it is unable to facilitate resolution, analyze underlying causes, and support the development and application of best practices, all of which, together, ultimately leads to a higher level of network reliability that can better support E9-1-1 service and emergency response.

2. Comments

21. Most industry commenters argue that the Commission does not need to collect interconnected VoIP service outage information because service providers have market incentives to ensure that their systems are reliable.⁵² Some industry commenters argue that the interconnected VoIP information is unnecessary because broadband network technologies⁵³ are designed to reroute traffic to avoid loss of service and/or connectivity, and thus an outage of a facility for interconnected VoIP service may have no effect on the ability to continue to send or receive the related traffic.⁵⁴ Some industry commenters argue that the burdens of extending the Part 4 requirements outweigh the benefits or are otherwise not justified.⁵⁵ State government⁵⁶ and commenters from critically important industry sectors,

⁵⁰ *NPRM*, 26 FCC Rcd at 7170 ¶¶ 11, 26, 40, 46.

⁵¹ See Om Malik, *VoIP Has Serious Problems*, GigaOM, March 6, 2005, available at <http://gigaom.com/2005/03/06/voip-has-serious-problems/> (last visited Feb. 7, 2012).

⁵² See, e.g., American Cable Association (ACA) Comments at 2; AT&T, Inc. (AT&T) Comments at 11-14; The Wireless Association (CTIA) Comments at 6; MegaPath Inc. (MegaPath) Comments at 3-4; MetroPCS Communications, Inc. (MetroPCS) Comments at 6-7; Sprint Nextel Corporation (Sprint) Comments at 5; T-Mobile USA, Inc. (T-Mobile) Comments at 1-3; United States Telecom Association (USTA) Comments at 2-3; the Voice on the Net Coalition (VON Coalition) Comments at 5-6; Vonage Holdings Corp. (Vonage) Comments at 5-6; XO Communications (XO) Comments at 3.

⁵³ VoIP service relies on broadband technologies.

⁵⁴ See MetroPCS Comments, at 9-10; National Cable & Telecommunications Association (NCTA) Comments at 5; Sprint Comments at 5; Verizon and Verizon Wireless (Verizon) Comments at 11; XO Comments at 3.

⁵⁵ AT&T Comments at 2; Time Warner Cable Inc. (Time Warner) Comments at 6; VON Coalition Comments at 10. We address the costs and benefits of the new rules below at paras. 45-53, *infra*.

⁵⁶ MDTC Comments at 2; Michigan Public Service Commission (Michigan PSC) Comments at 2-3; National Association of State Utility Consumer Advocates and the New Jersey Division of Rate Counsel (NASUCA) Comments at 8-11; New York Public Service Commission (NYPSC) Comments at 2, 5-7; Letter from J. Bradford Ramsey, General Counsel, National Association of Regulatory Utility Commissioners, to the Honorable Julius Genachowski, Chairman, Federal Communications Commission, *et al.*, dated Feb. 8, 2012 (“NARUC February 8, 2012 *Ex Parte* Filing”).

such as finance and utilities,⁵⁷ however, support the Commission's tentative conclusion that this additional outage information is needed to protect the public.

3. Discussion

22. Based on the record in this proceeding, we continue to believe that outage reporting is the most effective and least burdensome way to ensure that interconnected VoIP providers are meeting their statutory obligation to provide 9-1-1 service and that, without such reporting, we will continue to have extremely limited visibility into the reliability of access to 9-1-1 emergency services, which impairs our ability to secure improvements in 9-1-1 service reliability and to fulfill our statutory obligations pursuant to the NET9-1-1 Act.

23. To address network reliability issues, the Commission has generally employed the light-touch approach of using outage reporting requirements to facilitate the development and use of voluntary best practices, rather than an approach that relies on such measures as mandating specified levels of performance. Since the institution of the Part 4 rules in 2004, we have reviewed and analyzed outage data on both an individual provider and an aggregated basis. We regularly collaborate with providers to identify the causes of outages, develop and apply best practices to address the causes of both isolated and systemic outages, and in some cases, even facilitate restoration efforts.

24. The Commission is uniquely positioned to piece together an overall picture of aggregated network performance because of the ability to collect and analyze outage data provided by communications providers that would otherwise be disinclined to share sensitive outage data. No single provider – even with strong commercial incentives to ensure that its network performance attracts and retains customers – has the data to spot trends across industry and lead efforts to coordinate effectively with other governmental entities and industry working groups. The Commission's ability to look at information received from different providers' outage reports allows us to assess large-scale outages when they occur, thereby increasing the opportunities for federal assistance in dealing with the immediate problem. The following discussion identifies a number of ways that outage reports have served as a uniquely effective precipitating force for improving network reliability – and thus the reliability of 9-1-1 services.

25. *Collaboration with Network Reliability Steering Committee.* On a quarterly basis, the Commission provides the NRSC with aggregated outage data across all entities subject to Part 4 of the rules and draws attention to those categories of outages showing a statistically significant trend upward in the number of outages. With respect to these categories of outages, the Commission then requests that the NRSC create a team to recommend procedures, best practices and, in some cases, equipment design alterations to address the underlying issue.

26. A complete wireline outage impairs the ability of consumers to reach 9-1-1. Hence, a dramatic reduction in wireline outages will result in a dramatic reduction in lost 9-1-1 calls. In 2008, the frequency of wireline outages was increasing at a rate of 3.5 percent per month. The Commission referred this situation to the NRSC, which analyzed the major causes of these outages and recommended best practices to reverse the trend. The NRSC team found that the substantial increase in wireline outages was 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.⁵⁸ As the chart below illustrates, during the six-month period when the Commission worked with the NRSC to reverse the trend in wireline

⁵⁷ Financial Services Sector Coordinating Council Reply Comments at 2; Utilities Telecom Council Reply Comments at 1-2.

⁵⁸ ATIS, NRSC Bulletin No. 2009-006 Wireline Outages (Oct. 2009).

outages, there was a more than 40-percent reduction in the estimated lost 9-1-1 calls due to wireline outages.

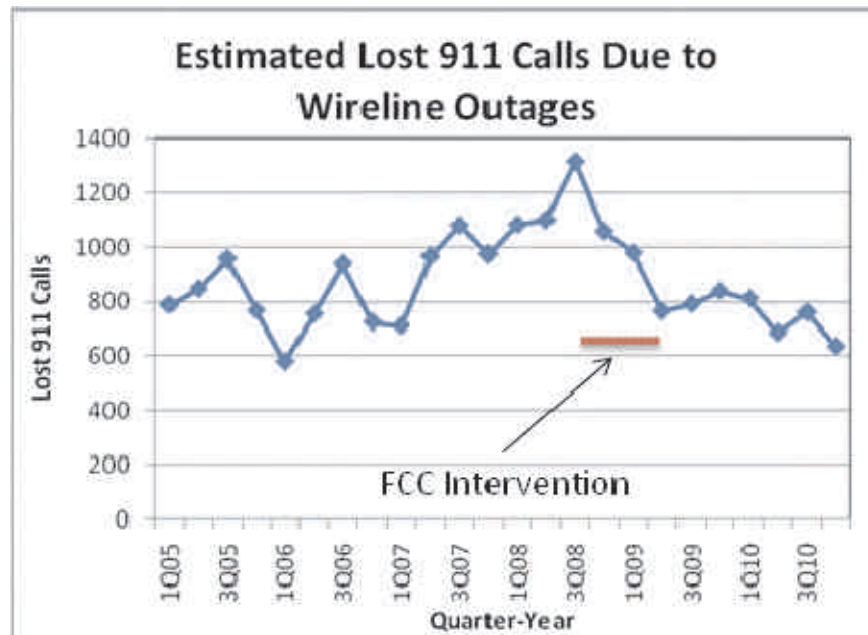


Figure 1: Estimated Reduction in Lost 9-1-1 Calls

27. Moreover, the Commission also has addressed several other types of outage problems that are not reflected in the Figure 1 data. In 2005 and 2006, analysis of NORS data revealed an extremely high incidence of outages affecting back-up-paths (*i.e.*, those paths that handle traffic when the primary paths fail) in high-capacity transport circuits.⁵⁹ The Commission requested that the NRSC develop and implement revisions to existing best practices to reduce the length of time that back-up-paths were inoperative. In the months following the Commission's referral of this problem to the NRSC, the number of these outages dropped by more than 65 percent,⁶⁰ increasing the resiliency of the communications infrastructure and the availability of public safety communication services.

28. In 2009, analysis of data filed in NORS revealed a high incidence of outages affecting the portion of the network dedicated to 9-1-1 (*i.e.*, dedicated routers and trunks responsible for routing 9-1-1 calls to emergency dispatch operators).⁶¹ Again, the Commission worked with the NRSC to identify best practices that would prevent these problems. A year later, these outages had decreased by 13 percent.

⁵⁹ 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).

⁶⁰ Presentation by John Healy, Telecommunications Systems 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 this proceeding on May 12, 2011).

⁶¹ See <http://editor5.securesites.net/911/> (last visited Feb. 2, 2012), for a description of how a 9-1-1 call traverses the dedicated 9-1-1 network. See also 47 C.F.R. § 9.3 Definitions, Wireline E911 Network, describing portions of the telephone network dedicated to serving 9-1-1 calls.

29. In 2011, following widespread wireless 9-1-1 failures in the Washington, D.C. area during a major snowstorm, the Commission referred an issue regarding Centralized Automatic Message Accounting trunk performance to the NRSC.⁶² After studying the problem, the NRSC recommended changes in equipment settings and emergency procedures that have been applied nationwide to resolve an issue that was causing trunks carrying traffic to PSAPs to go out of service.⁶³

30. *Coordination with Individual Providers.* Based on analyzing outage data, the Commission has been able to spot statistically significant upward trends in the number of outages filed by particular providers, trends that the provider had either not identified or not addressed adequately. In these cases, the Commission contacts the provider and works with it to identify causes and solutions. In several such cases, service providers have implemented large-scale improvements to their networks. The net result of reducing the number of reportable outages is increased resiliency of the communications infrastructure and availability of the public safety services that rely on the communications infrastructure. For example:

- In 2006, after NORS analysis revealed a major outage, the provider, at the Commission's urging, implemented an audit program across its entire footprint to monitor the diversity of all major facilities, including critical 9-1-1 and Signaling System 7 (SS7) facilities. The importance of this work was magnified because the source of these outages was a Digital Cross Connect System, a major hub for traffic in carrier networks.
- In 2008, after NORS analysis revealed a large increase in the number of wireless outages affecting access to 9-1-1, a major wireless provider instituted new monitoring capabilities on its links and aggressively worked with the companies from which it leased facilities to improve the reliability of the facilities. By 2009, the number of this type of outage had decreased by 60 percent.
- In 2006, after NORS analysis revealed a large outage affecting B and D links,⁶⁴ resulting in 3.5 million blocked calls, a major provider instituted new rules on the sizing of B or D links to ensure the links in the SS7 networks are not overloaded.
- In 2009, after NORS analysis revealed that software problems were the root cause of an unusually high number of outage reports over the course of several months, a major provider replaced dense wavelength division multiplexing amplifier cards to correct the situation.

31. *Identification of Industrywide Issues Through NORS Analysis.* In 2010, Commission staff discerned from outage reports that a significant number of outages associated with delivery of 9-1-1

⁶² Centralized Automatic Message Accounting (CAMA) trunks are dedicated for Enhanced 911 use, and when reported to the telephony system provider, get immediate repair. Another feature that CAMA trunks provide is End User Hold. If a 911 call is placed on an ISDN PRI circuit and gets disconnected, the call drops and that channel of the T1 becomes idle. With CAMA trunks, the End User Hold feature keeps that call activated with the PSAP operator, displaying the calling party number. See http://www.amcomsoftware.com/Solutions/Enhanced_911_Solutions/FAQ/ (last visited Feb. 2, 2012).

⁶³ See NRSC 9-1-1CAMA Trunk Throughput Optimization Analysis (Aug. 2011), at 14-15 available at http://www.atis.org/legal/Docs/NRSC/CAMATrunk_Transmittal_Final.pdf (last visited Feb. 10, 2012).

⁶⁴ A "B" (bridge) link connects an SS7 Signaling Transfer Point (STP) to another STP. Typically, a quad of "B" links interconnect peer (or primary) STPs (e.g., the STPs from one network to the STPs of another network). A "D" (diagonal) link connects a secondary (e.g., local or regional) STP pair to a primary (e.g., inter-network gateway) STP pair in a quad-link configuration. Secondary STPs within the same network are connected via a quad of "D" links. The distinction between a "B" link and a "D" link is rather arbitrary. For this reason, such links may be referred to as "B/D" links. See <http://pt.com/page/tutorials/ss7-tutorial> (last visited Feb. 2, 2012).

services were being caused by a relatively small number of factors, each of which could be addressed by applying a known best practice. For example, Network Operators and Service Providers should consider placing and maintaining 9-1-1 circuits over diverse interoffice transport facilities⁶⁵ and deploy Diverse Automatic Location Identification systems used in Public Safety.⁶⁶ The Public Safety and Homeland Security Bureau (PSHSB) issued a *Public Notice* urging communications providers to implement these practices widely in their networks.⁶⁷

32. *Leveraging Outage Data to Assist Emergency Response.* During emergency situations, the Commission assists emergency response by providing “Notification”⁶⁸ data in NORS directly to the U.S. Department of Homeland Security, where it is used to support restoration efforts and emergency response. The Commission also uses it to provide real-time support to PSAPs that have been affected by a 9-1-1 outage.

33. For example, during Hurricane Katrina, the Commission received over 65 reports of outages from 21 providers. NORS 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 obtain FEMA’s assistance in maintaining operations in a vital communications hub in New Orleans, the Poydras St. Central Office. Specifically, outage data identified the importance of this particular switch to maintaining communications to a major part of the affected area, and it also revealed that the central office was down due to lack of power. In order to restore the functioning of the switch, personnel needed to access the area to provide fuel for the generators. Once the switch was functioning normally, it required security protection to ensure continued operations and stable access to fuel and back-up power. Based on information that the Commission provided to FEMA, U.S. Marshals were sent to secure the site.⁶⁹

34. In the years since Hurricane Katrina, the Commission, working with industry stakeholders, has developed and implemented a voluntary reporting system – Disaster Information Reporting System (DIRS) -- for use in large-scale emergencies. The decision to activate DIRS is based in large part on data that is made available to the Commission through NORS, which remains the Commission’s most expedient way to become aware of the effect on communications of major man-made and natural disasters. DIRS covers a broader range of communications than those services reported through NORS under Part 4 and is also used to track restoration efforts. Typically, we suspend NORS reporting in favor of the more comprehensive and more flexible DIRS system in the disaster area for the

⁶⁵ See Best Practice 8-7-0566, available at <https://www.fcc.gov/nors/outage/bestpractice/DetailedBestPractice.cfm?number=8-7-0566> (last visited Feb. 2, 2012).

⁶⁶ See Best Practice 8-8-075, available at <https://www.fcc.gov/nors/outage/bestpractice/DetailedBestPractice.cfm?number=8-8-0575> (last visited Feb. 2, 2012).

⁶⁷ 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. March 24, 2010, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-10-494A1.pdf (last visited Feb. 10, 2012).

⁶⁸ As indicated in the *2004 Part 4 Order and FNPRM*, the Commission provides encrypted NORS data to the U.S. Department of Homeland Security. See *2004 Part 4 Order and FNPRM*, 19 FCC Rcd at 16856 ¶ 47.

⁶⁹ Kneuer, J. U.S. Department of Commerce, The National Telecommunications and Information Administration (2006) (NTIA). NTIA Comments to the *Recommendations of the Independent Panel Reviewing the impact of Hurricane Katrina on Communications Networks*, EB Docket No. 06-119, *Notice of Proposed Rulemaking*, 71 Fed. Reg. 38564-01 (2006).

duration of the crisis. For example, in the wake of the unprecedented tornadoes in Missouri and Southern states and flooding of the Mississippi River in 2011, NORS data was the Commission's first view of the extent of the damage to communications facilities in those areas. In each case, NORS data was a critical factor in the decision making process of the Federal agencies involved to escalate the reporting requested of industry in connection with the disaster. DIRS was activated in both of these cases, and the information received assisted emergency response and resource allocation decisions in those disaster areas.

35. We believe that these examples show that our intervention, guided by outage reporting data, has resulted in tangible improvements to the communications reliability necessary to support 9-1-1 service. As reflected above, no single provider – even with strong commercial incentives to ensure that its network performance attracts and retains customers – has the data to spot trends across industry and lead efforts to coordinate effectively with other governmental entities and industry working groups. Indeed, we have seen that individual providers do not always take steps within their own operations to address reliability problems unique to themselves.⁷⁰ We thus disagree with commenters who argue that market incentives eliminate the need for network outage reporting to the Commission. In addition, we are not persuaded by the claims of a few commenters that outage reporting is unnecessary because broadband technologies reliably reroute traffic or that market incentives are sufficient to prevent significant outages.⁷¹ We find that these claims are belied by the rise in the incidence of significant VoIP outages.⁷² Further, the extent to which network rerouting is successful in preventing outages cannot be determined in the absence of outage data. Observers in critical infrastructure industries and in government, domestically and abroad, are becoming increasingly aware of the need to track reliability data obtained from services relying on broadband technologies to help ensure the reliability of emergency services and critical communications.⁷³

36. Further, reporting outage data is the most efficient means for the Commission to ensure that interconnected VoIP service providers are complying with their statutory obligation to provide 9-1-1 service, and to obtain critical information needed to monitor the reliability and availability of VoIP

⁷⁰ See *infra* note 82 and accompanying text.

⁷¹ See, e.g., Sprint Comments at 5, 7, 9 (Internet protocol networks will re-route traffic when a network node fails); CTIA Comments at 3-4 (next generation wireless standards rely on packet-switching, which divides the voice transmission into packets and sends them over the fastest available route). See also Vonage Reply Comments at 2-3 (VoIP communications are chopped into “packets” that are then routed over the fastest available route, meaning disruption along one network path will not necessarily interrupt communications); Wireless Communications Association, International, Inc Reply Comments at 1-3 (Internet guards against link failures by routing packets through any available path, in contrast to plain old telephone services, which rely on dedicated transmission paths that often have a single point of failure).

⁷² See *supra* para. 6.

⁷³ The basic problem of understanding the extent of the problem without the tools to fully understand it has been observed by others. At the *FCC Workshop*, Laurie Flaherty observed: “Without gathering information from each and all [of the interconnected VoIP service providers and broadband ISPs], it is difficult to figure out . . . how much of a problem you are actually dealing with . . . it is really difficult to figure out how to manage what you can't measure. So from the FCC's perspective, in terms of the statutory requirement to ensure 911 services, I don't know how you would do that without being able to figure out that large a picture [obtained through outage reporting].” Laurie Flaherty, Coordinator, National 911 Program, National Highway Traffic Safety Administration, *FCC Workshop*, Transcript at 60.

Masaru Fujino, Counselor, Embassy of Japan in USA, Ministry of Foreign Affairs of Japan, recently observed that the number of outage events in IP-based services are increasing, jumping from just seven severe incidents in Fiscal Year 2003 to eighteen severe incidents in Fiscal Year 2009. The Japanese government found that many outage incidents involving IP based networks were due to software malfunctions. *FCC Workshop*, Transcript at 45, 48.

9-1-1/E9-1-1 services. As indicated above, both the Act and the Commission's rules mandate that interconnected VoIP service providers provide 9-1-1 and E9-1-1 service, and the rules we adopt today will provide the Commission with a mechanism in place to monitor whether these providers are complying with this basic obligation. Requiring interconnected VoIP service providers to promptly file reports when they experience outages that meet certain thresholds appears vastly superior, for example, to a complaint-driven process; the latter would likely be ineffective in enabling the Commission to detect and resolve quickly (with assistance from the providers involved) failures in the provision of 9-1-1 and E9-1-1 service.⁷⁴

B. Mandatory or Voluntary Requirement

37. As discussed below, we conclude that reporting significant outages of interconnected VoIP service should be mandatory.

1. Proposal

38. In the *NPRM*, the Commission proposed mandatory reporting of significant outages for interconnected VoIP service providers. Mandatory reporting would permit the Commission to obtain a comprehensive, nationwide view of significant outages and assess and address their impact on 9-1-1 and other services, whereas voluntary reporting would likely create substantial gaps in data that would thwart efforts to monitor compliance with statutory obligations and to analyze and facilitate improvement of the Nation's 9-1-1 system.⁷⁵ Therefore, we tentatively concluded that long-term voluntary reporting would serve neither the Nation nor the public well, particularly in light of our negative experience with voluntary reporting from providers of legacy services before the adoption of Part 4.⁷⁶

2. Comments

39. Some commenters suggest that, if the Commission extends its outage reporting rules, then reporting should be entirely voluntary,⁷⁷ with some arguing that existing voluntary efforts by providers and their ongoing involvement in public-private coordination efforts to share information and promulgate best practices are sufficient to minimize risks to the communications infrastructure.⁷⁸ Several industry parties argue that any reporting process should be voluntary and modeled after the voluntary DIRS.⁷⁹ Several providers argue that, if the Commission moves forward, there should be an interim period of up to two years before outage reporting becomes mandatory.⁸⁰

⁷⁴ In other contexts, the Commission has opted to require reporting in lieu of more proscriptive requirements. For example, Section 1.2110(n) of the Commission's Rules requires wireless providers that claim Designated Entity (DE) status to file an annual report to affirm the provider's continuing status as a DE. *See* 47 C.F.R. § 1.2110(n); FCC Form 611-T. Section 73.3615(a) of the Commission's Rules requires licensees of commercial AM, FM, and full power television broadcast stations as well as Licensees of Class A and Low Power Television stations to file an ownership report every two years to ensure compliance with statutory ownership limits. *See* 47 C.F.R. § 73.3615(a); FCC Form 323.

⁷⁵ *NPRM*, 26 FCC Rcd at 7189 ¶ 56.

⁷⁶ *NPRM*, 26 FCC Rcd at 7189-90 ¶ 57.

⁷⁷ *See, e.g.*, ATIS Comments at ii, 16; AT&T Comments at 17-18; *see also* CenturyLink Comments at 20; Sprint Comments at 3; T-Mobile Comments at 10; Telecommunications Industry Association (TIA) Comments at 5; Verizon Comments at 6, 8.

⁷⁸ *See* CenturyLink Comments at 20; CTIA Comments at 2, 7; National Cable & Telecommunications Association (NCTA) Comments at 3, 12, 16.

⁷⁹ *See* T-Mobile Comments at 2, 10; USTA comments at 4, n.10; *see also* Verizon Comments at 8-10.**

⁸⁰ ATIS Comments at ii; CenturyLink Comments at 21.

3. Discussion

40. *Shortcomings of voluntary reporting.* Our experience in other contexts has been that competitive friction frequently makes service providers reluctant to voluntarily disclose detailed information about their own service outages. A voluntary outage reporting trial was attempted, without success, prior to the adoption of the Part 4 rules.⁸¹ There was “a history of several years of unsuccessful voluntary outage reporting trials conducted by groups working under the auspices of Network Reliability and Interoperability Council (NRIC). Those trials, which were conducted over a four-year interval . . . encouraged . . . providers to participate actively and fully in those network outage-reporting effort,” but “participation was spotty and . . . the quality of information obtained was very poor.”⁸² Based on this experience, the existing Part 4 reporting system was adopted as a mandatory reporting scheme to ensure timely, complete and accurate reporting.

41. We have no reason to believe that interconnected VoIP service providers are different, and the record in this proceeding provides us with no reason to believe that long-term voluntary reporting would fare any better this time around. This reluctance would inhibit the development of a highly reliable, nationwide 9-1-1 service, because it inhibits the kinds of information sharing and analysis described above, which the Commission is uniquely positioned to undertake.⁸³ Hence, we agree with the Massachusetts DTC view of “voluntary practices as not removing the critical public safety need for outage data or reporting.”⁸⁴ Moreover, even if VoIP providers were not reluctant to share this information, an individual provider would have insufficient incentive to share such data, because some of the benefits would accrue to other providers. As we explained earlier,⁸⁵ the outage information shared by one provider has led to the development of industry best practices that have benefited all providers nationwide. We also share NASUCA’s view that “[s]ervice outage reporting is far too important to be left to the industry's voluntary participation,” and given the significant increase in VoIP usage, the risks of a less vigilant approach in this context are becoming indefensible.⁸⁶

42. We are also not persuaded by the argument that any new outage reporting process should apply the voluntary DIRS model.⁸⁷ There are significant differences between the purposes of DIRS and those of an outage reporting system. DIRS is a reporting system for use during large-scale disasters.⁸⁸ In

⁸¹ *2004 Part 4 Report and Order*, 19 FCC Rcd at 16840. Discussing its own experience with voluntary reporting of communications outages, NYPSC states that “despite commitments to participate, the level of real-time and consistent reporting by non-PSTN carriers has been a disappointment.” NYPSC Comments at 6.

⁸² *2004 Part 4 Report and Order*, 19 FCC Rcd at 16851-52. John Carlson, representing the Financial Services Sector Coordinating Council, made a similar observation on the question of why the extension of Part 4 of the Commission’s rules should not permit outage reporting on a voluntary basis: “[W]e did try that once . . . back before we did the original rules in Part IV today. We did that back in 2003 and 2004 as part of -- . . . the Network Reliability and Interoperability Council -- And it didn't work out so well. There were a lot of gaps in reporting, and so we concluded that just wasn't viable.” *FCC Workshop*, Transcript at 67-68. NASUCA echoed the FCC conclusion that past voluntary reporting efforts have been unsuccessful and have been “met with significant resistance.” NASUCA Comments at 10.

⁸³ *See supra* para. 24.

⁸⁴ MDTC Comments at 3.

⁸⁵ *See supra* paras. 14, 17.

⁸⁶ NASUCA Comments at ii-iii.

⁸⁷ *See, e.g.*, Verizon Comments at 8; T-Mobile Comments at 2, 10; ATIS Comments at 17-18.

⁸⁸ As discussed above, DIRS covers a broader range of communications than those services reported through NORS under Part 4 and is also used to track restoration efforts. Typically, we suspend NORS reporting in favor of the more comprehensive and more flexible DIRS system in the disaster area for the duration of the crisis.

disasters, it is important to have maximum flexibility in the types of information requested and the timing of reports so as to enhance situational awareness of the details of the emergency response. DIRS is rarely activated, and the urgent events that lead to its activation tend to motivate communications providers to cooperate to provide the information that is needed to support emergency response. Outage reporting, on the other hand, is designed to enable the Commission to identify key network failures quickly to facilitate restoration and, over time, to create a consistent body of data to permit statistical analysis of trends and patterns over time. Moreover, apart from the outage reports themselves, the Commission may otherwise be unaware of the underlying cause of the outage, such as an internal network failure, whereas outages reported under DIRS are generally widely known and created by an external event, such as a hurricane.

43. To the contrary, evidence suggests that the Commission's poor experience with voluntary outage reporting is not unique. The New York PSC, for example, comments that – based on its experience – voluntary reporting does not ensure that providers “will provide timely, accurate outage information.”⁸⁹ Likewise, the Japanese government finds it necessary to require mandatory outage reporting from broadband communications providers, including high-quality VoIP service.⁹⁰ Japan's adoption of the requirement was a response to the rapid increase of IP-based communications in Japan in recent years, including VoIP. Japan continues to see increasing dependency on VoIP as the primary means to make emergency calls. In 2008, Japan modified its outage reporting requirements to reflect this trend. Today in Japan, 18 million out of 26 million VoIP subscribers use high-quality VoIP, which is required to have an emergency call function, or something equivalent to the U.S. 9-1-1 emergency calling system.⁹¹

44. As we observed, the Commission attempted a voluntary outage reporting trial without success before adoption of the Part 4 rules. The record in this proceeding provides us no reason to believe that long-term, voluntary reporting would fare any better this time around. Although several commenters argue for a trial voluntary reporting period of 12 to 24 months, we believe a mandatory reporting requirement best meets the needs of the Commission to ensure the statutory mandate that interconnected VoIP service providers deliver reliable 9-1-1 service.

45. Similarly, in 2009, the European Union adopted a Directive obligating Member States to ensure that providers of broadband communications notify their respective national regulatory authorities of any breach of security or loss of integrity that has a significant impact on the operation of networks or services. Member States must ensure that the providers take all appropriate steps to ensure the continuity of services and to notify their national regulatory authority of any loss of integrity having a significant impact on network operations or services.⁹² Prior to adoption of the 2009 Directive, only Finland and

⁸⁹ NYPSC Comments at 6.

⁹⁰ According to Japan's Telecommunications Carriers Law Section 2, application providers have an obligation to report when there has 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 Feb. 3, 2012).

⁹¹ Masaru Fujino, Counselor, Embassy of Japan in USA, Ministry of Foreign Affairs of Japan, *FCC Workshop*, Transcript at 41, 44-45.

⁹² The European Union's Directive states: "Member States shall ensure that undertakings providing public communications networks take all appropriate steps to guarantee the integrity of their networks, and thus ensure the continuity of supply of services provided over those networks." Council Directive 2009/140, art. 13a(2), 2009 O.J. (L 337) 37 (EC)(*Directive*), available at <http://eur-ex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0037:01:EN:HTML> (last visited Feb. 3, 2012). "Member States shall ensure that undertaking 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." *Id.* at art. 13a(3).

Sweden had experience with this kind of reporting mechanism.⁹³ While Member States individually may amend national legislation, they are obligated to fulfill the objective of the 2009 EU Directive.⁹⁴

46. In short, given the long-term upward trend in VoIP subscription and use, the growing dependence on VoIP for 9-1-1 communications, our prior experience with voluntary reporting, and the statutory mandate that VoIP providers provide 9-1-1, we adopt mandatory outage reporting of interconnected VoIP service, as detailed below. Further, to the extent that interconnected VoIP service providers have affiliated and/or non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications, these obligations apply equally to these entities.

47. The rules adopted today modify significantly the proposal in the *NPRM*, in part in response to providers' concerns regarding the costs and burdens associated with reporting significant outages. Specifically, in the *NPRM*, we proposed to extend Part 4 to broadband Internet service providers as well as interconnected VoIP providers. In addition, we proposed to require reporting as outages both loss of service/connectivity as well as situations where, though service is technically being provided, packet loss, latency or jitter were experienced at a level that effectively prevented communication.⁹⁵

48. We are not acting at this time on the extension of Part 4 rules to broadband Internet service providers or to outages based on performance degradation, both of which were sharply opposed by industry on several bases, but especially based on the expected costs to implement these proposals. The rules we adopt today to extend outage reporting to interconnected VoIP services received broad support in the record, and no commenter has argued that this scaled-back, modified extension of outage reporting would be unduly burdensome. We believe that the reporting obligation we impose today will allow us to fulfill our own obligations and to adequately monitor providers' compliance with the obligations. To the extent our predictive judgment proves incorrect, the Commission may revisit this conclusion in the future.

49. *Expected data collection costs.* The record in this proceeding reflects that the additional costs of compliance with our data collection requirement would be minor and significantly outweighed by the benefits. We require the reporting only of significant outages where customers lose service and/or connectivity and, therefore, the ability to access 9-1-1 services. Since every interconnected VoIP service provider has a competitive interest in providing reasonable network reliability to satisfy their customers, it is reasonable to conclude that every such provider is already tracking this sort of information in some manner.⁹⁶ We agree with the comments of the NASUCA and the New Jersey Division of Rate Counsel, which observe, "because VoIP service providers . . . should already be collecting outage-related data in the normal course of conducting their businesses and operations," submitting reports to the Commission "would not result in an undue administrative burden."⁹⁷

50. The record confirms that the configuration of VoIP service should already make this information available. End-user VoIP terminals are IP-enabled devices that run Simple Network Management Protocol (SNMP) with the associated Management Information Base (MIB) or can be monitored by various keep alive mechanisms. Thus, the Network Management System (NMS) of

⁹³ Uffe-Holst Jensen, Councillor, European Commission, *FCC Workshop*, Transcript at 15-16.

⁹⁴ *Id.* at 18.

⁹⁵ With respect to the costs associated with the original proposal to adopt thresholds for quality of service, Verizon claimed it would have to spend in excess of \$100,000,000 (*i.e.*, \$75,000 to upgrade every router). Verizon Comments at 22.

⁹⁶ *See, e.g.*, Verizon Comments at 3.

⁹⁷ NASUCA Comments at 11.

interconnected VoIP providers is able to auto-poll or execute a manual poll of a portion or all of its VoIP-enabled devices to see if they have connectivity. Thus, interconnected VoIP service providers have the ability to monitor their end-user devices to determine if connectivity to those devices has been lost.⁹⁸ The inability of a VoIP-enabled device to connect with its call management system (SIP proxy, Call Manager, *etc.*) prevents the end-user VoIP-enabled device from making a call, whether or not the end-user device has IP connectivity. This call management system is similar to SS7, where a similar failure would also prevent voice service. These types of failures, if large enough, would most certainly generate a “trouble ticket” or, for smaller incidents, register on similar systems that track outages and customer technical issues. Therefore, it is reasonable to conclude that interconnected VoIP service providers currently have the ability to monitor VoIP-enabled end-user devices for connectivity.⁹⁹ No more is required to satisfy the data collection obligation established here.

51. Indeed, the record reflects that the costs involved in determining whether customers are completely out of service do not impose an undue burden. AT&T suggests that if the Commission extends outage reporting to interconnected VoIP service providers, it should adopt a simple reporting threshold, such as lack of service and/or connectivity.¹⁰⁰ Similarly, Vonage maintains that if the Commission adopts interconnected VoIP service outage reporting, it should require only reporting of “actual loss of communications due to a failure on the provider’s own network. . . [because it] . . . would avoid the heavy burden . . . while also conserving scarce resources.”¹⁰¹

52. Not only do the National Cable & Telecommunications Association, the American Cable Association, and the National Telecommunications Cooperative Association agree that the approach taken today is substantially less burdensome than the one proposed in the *NPRM*,¹⁰² but a wide array of

⁹⁸ At the *FCC Workshop*, Mark Adams commented: “So, at a basic level, we obviously do device level monitoring, and based on the types of devices, we know generally -- not always, but generally -- is it completely service affecting, or is it going to result in some kind of degradation. So we do device level monitoring. We monitor our end points for on or off status right through the switches, and through our cable modems.” Mark Adams, Executive Director, Technology Operations, Cox Communications, *FCC Workshop*, Transcript at 106.

⁹⁹ See, e.g., <http://www.juniper.net/us/en/local/pdf/app-notes/3500145-en.pdf> (last visited Feb. 3, 2012). These materials from Juniper Networks on “Real-Time Performance Monitoring on Juniper Network Devices” describe features available in this major vendor’s routing and switching platforms utilized by interconnected VoIP service providers that allow the service providers to determine if connectivity exists to the end-user VoIP-enabled devices.

¹⁰⁰ AT&T proposes the following requirement: “All interconnected VoIP providers shall submit electronically a Final Report within 30 days of discovering that they have experienced on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 120 minutes duration: (1) of a non-redundant VoIP network element; (2) that potentially isolates subscribers’ service for at least 900,000 user minutes; or (3) potentially affects a 911 special facility (as defined in paragraph (e) of Section 4.5).” AT&T Reply Comments at 8-9; see also ATIS Comments at 13; Century Link Comments at 13.

¹⁰¹ Vonage Comments at 8.

¹⁰² See *Ex Parte* Notice Letter, dated Dec. 16, 2011, from Steven F. Morris, Vice President, NCTA, to Marlene H. Dortch, Secretary, Federal Communications Commission (FCC), at 1 (giving tacit support for extending Part 4 requirements to interconnected VoIP services only, because such an approach would provide the Commission with valuable outage data, but would be far less burdensome and less expensive than the proposal in the *NPRM*) (filed Dec. 16, 2011); and see also *Ex Parte* Notice Letter, dated Dec. 9, 2011, from Barbara Esbin, Counsel, ACA, to Marlene H. Dortch, Secretary, FCC, at 3 (noting that limiting Part 4 requirements to interconnected VoIP providers undergoing “hard-down” service outages, providing additional time to make the required outage notifications to the Commission, and eliminating the need to file a detailed Initial Report would be a more reasonable and less burdensome approach to achieving the Commission’s stated goals than the requirements proposed in the *NPRM*) (filed Dec. 12, 2011); and see also *Ex Parte* Notice Letter, dated Dec. 19, 2011, from Jill Canfield, Director, Legal & Industry, National Telecommunications Cooperative Association, to Marlene H. Dortch, Secretary, FCC, at 1-2 (indicating that limiting the rules to “hard downs” affecting interconnected VoIP providers would be substantially (continued....))

commenters, including AT&T, Comcast, the Edison Electric Institute, and CTIA – The Wireless Association – submit that the type of outage reporting requirement we are adopting today is either reasonable, not unduly burdensome, or could be applied so as not to be unduly burdensome.¹⁰³ Even small providers do not assess our outage reporting requirement to be a burden. OPASTCO states that “small ILECs have functioned under Part 4 rules for a number of years without significant impacts on their operations” and, therefore, that extending Part 4 requirements to interconnected VoIP providers “should not prove to be unduly burdensome.”¹⁰⁴ US Telecom urges that if the Commission adopts outage requirements, that such requirements should be limited to a complete loss of interconnected VoIP service, and that such limits could contribute to a “more reasonable and less costly approach in achieving the Commission’s stated goals”¹⁰⁵ We do just that.

53. As interconnected VoIP service providers are driven by business reasons to monitor for service outages, it follows that tracking such information under our rules should not be unduly burdensome. It is significant that not one commenter has stated that it would have to install any additional equipment into its network to detect when a large number of VoIP customers are out of service. We find that mandatory reporting of significant outages is minimally intrusive and fully justified by the benefits of ensuring compliance with statutory 9-1-1 statutory obligations and benefits to public safety through robust 9-1-1 communications that we expect to result from our analysis and use of the reports.

54. *Expected data reporting costs.* Because service providers already have technical and competitive business reasons to routinely collect outage information, the costs of compliance with a reporting requirement are essentially those of identifying reportable outages, then electronically

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less burdensome and appears reasonable and appropriate) (filed Dec. 19, 2011).

¹⁰³ See also *Ex Parte* Notice Letter, dated Nov. 23, 2011, from Joseph Marx, AT&T, et al., to Marlene H. Dortch, Secretary, FCC, at 2 (suggesting that the rules could be applied without undue burden to interconnected VoIP providers, provided such outage reporting apply only to events affecting a 9-1-1 facility or involving a complete loss of service that has an actual impact on customers’ ability to reach emergency services) (filed Nov. 23, 2011); see also *Ex Parte* Notice Letter, dated Nov. 18, 2011, from Mary McManus, Comcast Corporation (Comcast), to Marlene H. Dortch, Secretary, FCC, at 1 (indicating that Comcast generally supports [and would not find unduly burdensome] extending existing Part 4 network outage reporting obligations to interconnected VoIP providers in light of the consumer transition from traditional telephone services to VoIP services) (filed Nov. 18, 2011); see also *Ex Parte* Notice Letter, dated Nov. 4, 2011, from David K. Owen, Executive Vice President, Edison Electric Institute, to Marlene H. Dortch, Secretary, FCC, at 3 (indicating that rules that account for the unique architectural characteristics of VoIP technologies will promote reliable data reporting upon which electric utilities and other CII can rely, without imposing an onerous burden on commercial service providers) (filed Nov. 4, 2011); and see also *Ex Parte* Notice Letter, dated Dec. 20, 2011, from Brian M. Josef, CTIA, to Marlene H. Dortch, Secretary, FCC, at 1-2 (indicating that applying the rules to only interconnected VoIP providers that have endured a “hard down” outage appears relatively less burdensome when compared to the rules proposed in the *NPRM*) (filed Dec. 21, 2011).

¹⁰⁴ *Ex Parte* Notice Letter, dated Dec. 7, 2011, from Stephen Pastorkovich, Business Development Director/Senior Policy Analyst, Organization for the Promotion and Advancement of Small Telecommunications Companies (OPASTCO), to Marlene H. Dortch, Secretary, FCC (filed Dec. 7, 2011).

¹⁰⁵ *Ex Parte* Notice Letter, dated Dec. 7, 2011, from Glenn T. Reynolds, USTA, to Marlene H. Dortch, Secretary, FCC (filed Dec. 13, 2011). But see *Ex Parte* Notice Letter, dated Nov. 18, 2011, from Nneka Ezenwa, Executive Director, Verizon, to Marlene H. Dortch, Secretary, FCC, at 1 (opposing extension of the outage reporting requirements to interconnected VoIP providers as redundant, costly, and burdensome) (filed Nov. 22, 2011); see also *Ex Parte* Notice Letter, dated Nov. 21, 2011 from Brian J. Raymond, Director, Technology Policy, National Association of Manufacturers, to Chairman Genachowski and Commissioners Copps, McDowell, and Clyburn, at 1 (opposing extension of Part 4 to interconnected VoIP providers as a additional regulatory burden) (filed Nov. 22, 2011).

reformatting and uploading that information into NORS.¹⁰⁶ Many of the interconnected VoIP customers are served by providers that already have years of experience filing outage reports in NORS with respect to other services.¹⁰⁷ For those interconnected VoIP service providers for which NORS will be new, there will be an additional learning curve. Few parties resist reporting the complete loss of interconnected VoIP service and/or connectivity based on the costs involved in reporting the data.¹⁰⁸ Starting with information in the record from parties with experience filing in NORS and extrapolating that to the total cost that industry will bear to start reporting significant interconnected VoIP outages in NORS, we estimate that *industry-wide* the total operating cost for reporting on interconnected VoIP outages and administering outage reporting programs likely is less than \$1 million in the first year¹⁰⁹ and less than \$500,000 per year thereafter for *all* the providers who will report.¹¹⁰

55. *Comparison of benefits and costs.* In arriving at our decision today, we considered feasible alternatives. We evaluated the cost effectiveness of our adopted approach against a less stringent option (*i.e.*, collecting no additional outage information) as well as several more stringent options (*i.e.*, collecting several types of performance degradation data in addition to collecting data on complete outages). We also considered other mechanisms, such as certification (by which, for example, we monitor compliance with statutory obligations regarding Customer Proprietary Network Information),¹¹¹ complaint-driven mechanisms, and the imposition of performance standards.

¹⁰⁶ For business reasons, providers would naturally want to know if customers are experiencing any major problem with service continuity. There are no commenters who have said that they do not already have the capability of determining whether their customers have experienced significant, complete, “hard-down” outages.

¹⁰⁷ For example, Verizon FiOS and AT&T U-verse interconnected VoIP customers are served by Verizon and AT&T respectively, both companies having years of experience filing outage reports in NORS.

¹⁰⁸ See *supra* note 103 and accompanying text.

¹⁰⁹ Commission staff estimate first-year costs to include one-time training costs of \$416,000 to train approximately 300 new reporting entities (*i.e.*, 5 employees * 100 large service providers * 4 hours * \$80/hour = \$160,000 and 2 employees * 200 small service providers * 8 hours * \$80/hrs = \$256,000 for a total of \$416,000 in first-year training costs) in addition to the annual cost to report outages and administer the outage reporting program. According to data received on Form 477, there are 466 companies providing interconnected VoIP service. Of those companies, staff estimates that at least one-third are already under obligation to report outages of legacy services under the existing Part 4 rules, and that therefore, approximately 300 providers of interconnected VoIP service will now be obligated to report outages that meet the thresholds of the new rule. Based on years of experience coordinating with reporting entities, Commission staff estimates that the largest companies train an average of five staff on outage reporting, and that smaller companies train up to two. In terms of the amount of training necessary, staff estimates that four hours of training will be required for staff in those companies that are already reporting outages of legacy services, and twice that amount will be required for companies that are new to outage reporting. Labor costs were assumed to be \$80 per hour. As discussed in note 110, *infra*, the anticipated reporting costs are \$450,000. Therefore, the anticipated first-year costs are \$416,000 plus \$450,000, or approximately \$866,000.

¹¹⁰ Commission staff estimates the annual outage reporting costs to be \$450,000 (*i.e.*, \$300 per report * 1,500 additional reports). Underlying this calculation is the comment of ATIS that one carrier has indicated its average labor costs associated solely with the preparation of outage reports is approximately \$300 per report. See ATIS Comments at 7, n.9. With respect to the number of expected additional reports, staff extrapolated from several years of outage reporting data regarding wireline service outages (which are functionally equivalent to outages of interconnected VoIP services) and estimates that up to 1,500 additional outage reports per year might be filed for the entire interconnected VoIP industry. Thus, 1,500 reports * \$300/report equals \$450,000 annual cost for outage reporting.

¹¹¹ See 47 C.F.R. § 64.2009(e); Implementation of the Telecommunications Act of 1996: Telecommunications Carriers’ Use of Customer Proprietary Network Information and Other Customer Information; IP-Enabled Services, *Report and Order and Further Notice of Proposed Rulemaking*, CC Docket. No. 96-115, WC Docket. No. 04-36, 22 (continued....)

56. Our approach captures most of the expected benefits while avoiding the much larger costs associated with more intrusive options. Our approach balances (a) the need for outage information on interconnected VoIP services that facilitates improved E9-1-1 and critical communications reliability with (b) the need to minimize the associated costs and burdens imposed on this growing segment of the communications industry. Further, the Nation and consumers will benefit from increased reliability of interconnected VoIP service, specifically with respect to 9-1-1 service by bringing interconnected VoIP services within the framework the Commission has established for collaborating with industry to bring about network improvements through voluntary applications of best practices. Even a modest improvement in the reliability of 9-1-1 services potentially represents lives saved. Based on the record, our analysis concluded the net benefits will be greater with the approach we are adopting. With respect to the less stringent option, our adopted approach provides all the benefits of increased reliability at a nominal cost estimated to be less than \$1 million industrywide. With respect to the more stringent option, our approach captures most of the expected benefits while avoiding the much larger costs associated with those options.

57. While some commenters urge a period of transition before any mandatory outage reporting requirements go into effect,¹¹² we find any significant delay unjustified in light of the fact that providers already monitor this type of activity in the ordinary course of their business and that the costs of electronically reporting related outages will not be substantial. Also, the vast majority of interconnected VoIP services are provided by an entity that also provides legacy services and, therefore, has years of experience filing in NORS.¹¹³ Finally, as our ultimate approach is much more circumscribed than the one proposed in the *NPRM*,¹¹⁴ implementing the required reporting will be far less complicated. A short interval is necessary, however, to ensure that NORS updates are completed to receive these new reports and PSHSB has an opportunity to present the updates to reporting providers and resolve questions. Therefore, we will make the mandatory reporting requirement effective 90 days after the Office of Management and Budget approves the information collection and will notify providers of the exact date by public notice as soon as possible after we receive the approval from OMB.

C. Legal Authority to Require Reporting of Outages of Interconnection VoIP Service

58. In the *NPRM*, we requested comment on the Commission's legal authority to extend the Part 4 outage reporting rules to interconnected VoIP service providers.¹¹⁵ We conclude that the Commission has sufficient legal authority to require the reporting of outages of interconnected VoIP service.

59. *Comments.* Some commenters originally expressed harsh opposition to the requirements proposed in the *NPRM*: three industry commenters argue that the Commission lacks authority to take the actions proposed in the *NPRM* with regard to interconnected VoIP.¹¹⁶ Others argue that the Commission's authority is either unclear or questionable.¹¹⁷ Several parties maintain that the link between the obligation to ensure 9-1-1 compliance by VoIP service providers and the imposition of outage reporting

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 FCC Rcd 6927 ¶¶ 51-53, 54 (2007) (extending Customer Proprietary Network Information requirements to interconnected VoIP service providers and adopting annual certification requirement).

¹¹² See, e.g., TIA Comments at 5; TIA Reply Comments at 5.

¹¹³ See *supra* note 107 and accompanying text.

¹¹⁴ *NPRM*, 26 FCC Rcd at 7186 ¶ 49.

¹¹⁵ *Id.* at 7192-93 ¶ 67-71.

¹¹⁶ AT&T Comments at 6; CTIA Comments at 12-16; Verizon Comments at 25-28.

¹¹⁷ ACA Comments at 1, 3-4; TIA Comments at 3-4. Like TIA, ATIS believes the issue of the Commission's authority needs to be resolved before we take any action. See ATIS Comments at 9.

requirements on them is too tenuous to support any assertion of direct or ancillary jurisdiction.¹¹⁸ Others suggest, however, that the Commission has some authority,¹¹⁹ or even that our authority here is “unambiguous.”¹²⁰ In more recent *ex parte* filings, many providers focus their legal objections on *NPRM* proposals that this Order does not adopt. For instance, US Telecom continues to challenge the Commission’s authority to impose outage reporting requirements for broadband services, but urges the Commission to “ensure that any reporting requirements that might be adopted are closely aligned with the Commission’s stated public policy goal of ensuring that consumers have access to emergency services. In order to accomplish this goal, the Commission should limit any reporting obligations to outages affecting a company’s own 911 facility or involving a complete loss of its interconnected VoIP service that has an actual impact on customers’ ability to reach emergency services.”¹²¹ Similarly, a group of providers jointly urges that “[w]ith respect to interconnected VoIP services . . . any outage reporting apply only to events affecting a 911 facility or involving a complete loss of service that has an actual impact on customers’ ability to reach emergency services.”¹²²

60. *Discussion.* We focus our analysis here on our authority to impose outage reporting requirements on interconnected VoIP, and not on other actions that were proposed in the *NPRM* but are not adopting here. We are not persuaded by arguments that the Commission lacks authority to extend our outage reporting requirements to interconnected VoIP service. Consistent with our mission in section 1 to “promote[e] safety of life and property,”¹²³ section 615a-1 of the Communications Act clearly imposes 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.”¹²⁴ Further, section 615a-1(c) generally directs the Commission to issue

¹¹⁸ See, e.g., Comcast Comments at 7-8; CTIA Comments at 12-16; Verizon Comments at 35-36.

¹¹⁹ See CenturyLink Comments at 25 (“The Commission’s statutory responsibility to ensure access to 9-1-1 services by subscribers to IP-enabled voice services likely provides it with the authority to adopt outage reporting requirements for interconnected VoIP service providers that are reasonable, directly related and limited to 9-1-1 service connectivity for interconnected VoIP subscribers.”); Comcast Comments at 2 (“Comcast supports the Commission’s efforts to extend reporting requirements to [interconnected VoIP] providers.”); see XO Comments at 9 (“XO agrees that the Commission has sufficient ancillary jurisdiction to require providers of interconnected VoIP services to report outages of their mandatory 9-1-1 services.”).

¹²⁰ See NASUCA Comments at 9; NASUCA Reply Comments at 14.

¹²¹ See *Ex Parte* Notification Letter dated Feb. 1, 2012, from Glenn Reynolds, USTA, to Marlene Dortch, Secretary, FCC (filed Feb. 1, 2012); see also *Ex Parte* Notification Letter, dated Feb. 2, 2012, from Brian M. Josef, Assistant Vice President—Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC (filed Feb. 2, 2012) (referencing the “reasonableness” of “reporting obligations in the event of a full, or ‘hard outage,’ occurring to interconnected VoIP service,” relative to broader proposals in the *NPRM*); *Ex Parte* Notification Letter dated Nov. 14, 2011, from Barbara Esbin, Cinnamon Mueller for ACA, *et al.* to James Arden Barnett, Jr., Rear Admiral (Ret.), Chief, Public Safety and Homeland Security Bureau, FCC (filed Nov. 14, 2011) (urging the Commission “to explore less burdensome alternatives” to the *NPRM* proposals and to “develop a set of outage reporting criteria that is designed to provide meaningful information about actual service disruptions that affect access to emergency services”).

¹²² *Ex Parte* Notification Letter, dated Nov. 23, 2011, from Joseph Marx, AT&T; Melissa Newman, CenturyLink; Kathy Zachem, Comcast; Trey Forgety, NENA; Kathy Grillo, Verizon; and Brendan Kasper, Vonage, to Marlene Dortch, Secretary, FCC (filed Nov. 23, 2011).

¹²³ 47 U.S.C. § 151.

¹²⁴ 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).

regulations implementing the statute.¹²⁵ Section 615a-1(c) thus grants the Commission authority to require network outage reporting with respect to interconnected VoIP services as provided herein.

61. In addition, the Communications Act grants the Commission broad authority to take necessary steps to implement the Act's mandates, and thus provides concurrent sources of authority for our actions to require network outage reporting. Sections 4(i) and 303(r) generally authorize the Commission to take any actions "as may be necessary" to ensure that interconnected VoIP providers fulfill their statutory 9-1-1 and E9-1-1 duties in section 615a-1.¹²⁶ As explained above,¹²⁷ network outage reporting for interconnected VoIP providers is one of the less intrusive means by which the Commission may monitor compliance with the statutory obligation to provide 9-1-1 and E9-1-1 service and identify and work to eliminate barriers to that compliance. Similarly, we find authority for mandatory reporting in section 403, which authorizes the Commission to launch inquiries to resolve compliance matters and other questions regarding the provisions of the Communications Act.¹²⁸ With regard to affiliates of common carriers --- the subscribers of which represent an increasing share of all residential interconnected VoIP subscribers, currently over ten percent¹²⁹ --- the Commission also is authorized to

¹²⁵ See 47 U.S.C. § 615a-1(c)(1) (requiring that "[t]he Commission---(1) within 90 days after July 23, 2008 issue regulations implementing [the NET 911 A]ct" and providing a non-exhaustive list of matters to address therein). Our actions here are not time-barred by the statutory deadline in Section 615a-1(c). See Section 615a-1(c)(3) (authorizing the Commission to "modify such regulations [provided for in section 615a-1(c)(1)] from time to time, as necessitated by changes in the market or technology, to ensure the ability of an IP-enabled voice service providers to comply with its obligation under section [615a-1](a) . . ."); see also *Connect America Fund: A National Broadband Plan for our Future: Establishing Just and Reasonable Rates for Local Exchange Carriers; High-Cost Universal Service Support; Developing a Unified INterCarrier Compensation Regime; Federal-State Joint Board on Universal Service; LifeLine and LinkUp; Universal Service Reform—Mobility Fund*, WT Docket No. 10-208, Report and Order and Further Notice of Proposed Rulemaking, 54 Comm. Reg. (P&F) 637, ¶ 767 n.1381 (rel. Nov. 18, 2011) (rejecting arguments that section 251(d)(1) deadline for Commission rulemaking implementing section 251 provisos barred subsequent Commission action); see also *Gottlieb v. Pena*, 41 F.3d 730, 733 (D.C. Cir. 1994) (even when an agency misses a statutory deadline, it retains jurisdiction over the matter unless Congress has set forth consequences for its failure to act, citing *Brock v. Pierce County*, 476 U.S. 253 (1986)).

¹²⁶ See 47 U.S.C. § 154(i) (authorizing the Commission to "perform any and all acts, make such rules and regulations, and issue such orders, not inconsistent with this Act, as may be necessary in the execution of its functions"); 47 U.S.C. § 303(r) (the Commission shall "[m]ake such rules and regulations and prescribe such restrictions and conditions, not inconsistent with law, as may be necessary to carry out the provisions of this Act . . .").

¹²⁷ See *supra* para. 53.

¹²⁸ See 47 U.S.C. § 403 ("The Commission shall have full authority and power at any time to institute an inquiry, on its own motion, in any case and as to any matter or thing concerning which complaint is authorized to be made, to or before the Commission by any provision of this chapter, or concerning which any question may arise under any of the provisions of this chapter, or relating to the enforcement of any of the provisions of this chapter.").

¹²⁹ Approximately 7 percent of residential interconnected VoIP subscriptions were attributable to incumbent local exchange carriers (ILECs) in June 2010, and the share had increased to approximately 9 percent by December 2010. See *March 2011 Local Competition Report*, Figure 4 (1.7M/25.2M). See also *October 2011 Local Competition Report*, Figure 4 (2.5M/27.1M). Information from corporate earnings reports suggests that the share continues to increase. See http://www2.verizon.com/idc/groups/public/documents/adacct/2011_4q_quarterly_bulletin.pdf (last visited Jan. 24, 2012), Wireline – Selected Operating Statistics showing Verizon FiOS Digital Voice residence connections totaled 1.884M in 4Q2011. See also http://www.att.com/Investor/Financial/Earning_Info/docs/4Q_11_IB_FINAL.pdf (last visited Feb. 3, 2012), Consumer Revenue Connections, note 2 showing AT&T U-verse consumer VoIP connections totaled 2.278M as of December 31, 2011. Therefore, Verizon FiOS and AT&T U-verse reported a combined total of 4.162M residential VoIP subscribers at year-end 2011, as compared to 3.218M six months earlier (+29 percent in six months). See http://www2.verizon.com/idc/groups/public/documents/adacct/2011_q2_qb.pdf (last visited Feb. 3, 2012), Wireline – Selected Operating Statistics. See also (continued...)

impose outage reporting requirements under section 218, which grants the Commission broad investigatory powers to inquire into the management of the business, which would include, *inter alia*, VoIP service providers that are affiliates of common carriers subject to the Act.¹³⁰ Finally, 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.¹³¹ As explained above,¹³² we do just that when we collect and examine outage reports. Hence, the Commission is on solid statutory ground to adopt the subject reporting rules, in order to implement the requirements of section 615a-1 and carry out our duties under section 4(o) and are supported by our authority under sections 218 and 403.¹³³

62. We disagree with several commenters alternative assessments of the relationship between Section 615a-1 and our authority. AT&T, for instance, argues that section 615a-1 is not an express grant of authority to the Commission to order the regulation of VoIP service providers, but rather the Commission's role under that provision is to "pave the way" for VoIP service providers to provide 9-1-1 and E9-1-1 service by adopting regulations applicable to the owners and controllers of 9-1-1 facilities, who are ILECs, CLECs, and third-party providers, to make that possible.¹³⁴ AT&T points to the context of the enactment of Section 615a-1 as indicative of the limited nature of its scope.¹³⁵ Similarly, CTIA argues that "[i]t is a strain" to impose outage reporting on VoIP service providers because "the scope of 615a-1 contemplates only the 'duty of each IP-enabled voice service provider to provide 9-1-1 service and enhanced 9-1-1 service to its subscribers'" and section 615a-1(e)(1) "specifically limits the Commission's authority to 'require or impose a specific technology or technological standard.'" ¹³⁶

63. AT&T's and CTIA's arguments are inconsistent with the express terms of the statute, which covers VoIP service providers and plainly is not limited to the owners and controllers of trunks and routers. Among the Commission rules that section 615a-1 codified are rules directly applicable to VoIP service providers. These rules impose detailed obligations on the manner in which interconnected VoIP providers provide E9-1-1. For instance, section 9.5(d) requires interconnected VoIP service providers to obtain from their customers the registered location of the end user, and to provide end users one or more methods of updating their registered location. Section 9.5(e) imposed on interconnected VoIP service providers notification and recordkeeping requirements concerning the limitations of the customer's E9-1-1 service. These requirements are now codified in the Communications Act. Although AT&T is

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http://www.att.com/Investor/Financial/Earning_Info/docs/2Q_11_IB_FINAL.pdf (last visited Feb. 3, 2012), Consumer Revenue Connections, note 5.

¹³⁰ See 47 U.S.C. § 218 ("The Commission may inquire into the management of the business of all carriers subject to this chapter, and shall keep itself informed as to the manner and method in which the same is conducted and as to technical developments and improvements in wire and radio communication and radio transmission of energy to the end that the benefits of new inventions and developments may be made available to the people of the United States. The Commission may obtain from such carriers and from persons directly or indirectly controlling or controlled by, or under direct or indirect common control with, such carriers full and complete information necessary to enable the Commission to perform the duties and carry out the objects for which it was created.").

¹³¹ Section 154(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 phases of the problem and the best methods of obtaining the cooperation and coordination of these systems." *Id.* § 154(o).

¹³² See *supra* para. 32.

¹³³ 47 U.S.C. § 615a-1(c).

¹³⁴ AT&T Comments at 2-3.

¹³⁵ *Id.*

¹³⁶ CTIA Comments at 12.

correct insofar as section 615a-1 is intended to “fill” a “missing piece of the VoIP 9-1-1 Service provisioning puzzle,” the reason is not, as AT&T states, that the Commission does not have authority over interconnected VoIP service providers and does not need to regulate them directly to ensure that they provide E9-1-1 service. Rather, Congress recognized that the Commission does have this authority over interconnected VoIP service providers and already had used it, so that most of the additional rules needed at the time of section 615a-1’s enactment would pertain to the “owners and controllers of routers and trunks.”¹³⁷

64. Further, AT&T’s and CTIA’s arguments are inconsistent with the Commission’s previous views on the scope of section 615a-1. Following enactment of the NET 911 Improvement Act, the Commission in implementing section 615a-1 adopted rules in the *NET 911 Report and Order*, which requires interconnected VoIP service providers to comply with all applicable industry network security standards to the same extent as traditional telecommunications carriers when accessing capabilities traditionally used by carriers.¹³⁸ This standard is comprehensive and not limited to network security standards that are ostensibly E9-1-1-related, in recognition that “the security of the nation’s emergency services network depends on many interlocking measures that collectively preserve the integrity of the 9-1-1 system from unauthorized access and use.”¹³⁹

65. With respect to CTIA’s concern about technological neutrality expressed in section 615a-1(e)(1) limitation, nothing in this *Report and Order* violates that limitation. Section 615a-1(e)(1) states that “[n]othing in [section 615a-1] shall be construed to permit the Commission to issue regulations that require or impose a specific technology or technological standard.”¹⁴⁰ The outage reporting requirement and threshold in this *Report and Order* do not favor or disfavor any particular technology. To the contrary, our action today arguably corrects an imbalance that existed by requiring some providers of voice and 9-1-1 service to report outages, but not others. Moreover, the rules adopted today treat interconnected VoIP service providers virtually identically to the way Part 4 current defines “outage,”¹⁴¹ sets the threshold that triggers reporting of an outage,¹⁴² and the outage reporting process.¹⁴³ Accordingly, we find AT&T and CTIA’s views unpersuasive.

¹³⁷ See H.R. Rep. 110-442 at 1012-13 (at Background and Need for Legislation, “H.R. 3403 does not reverse the Commission’s actions to date. The Commission, however, only imposed E-911 requirements on providers of VoIP service that today service as a substitute for traditional wireline telephone service. It did not require entities—typically LECs—that control certain key facilities and infrastructure that are needed to complete 911 and ED-911 calls to give VoIP providers access to those facilities and that infrastructure. As a result, VoIP service providers entered into commercial arrangements with LECs or third parties to gain access to 911 components. The Commission also concluded that it lacked authority to extend the liability protections afforded to wireline and wireless 911 calls to VoIP 911 calls. H.R. 3403 would resolve these issues....”), 1018 (at Section-by-Section Analysis of the Legislation, “New subsection [615a-1](1a) is not intended to reverse the Commission’s actions to date concerning the duty of VoIP service providers to provide 911 and E-911 services.

¹³⁸ *Implementation of the NET 911 Improvement Act of 2008*, WC Docket 08-171, *Report and Order*, 23 FCC Rcd 15884, 15901 ¶ 38 (2008).

¹³⁹ *Id.*

¹⁴⁰ 47 U.S.C. § 615a-1(e)(1). See H.R. 110-442 at 1020 (at “Section-by-Section Analysis of the Legislation”) “New subsection [615a-1](e) would provide that nothing in H.R. 3403 be construed to permit the Commission to require or impose a specific technology or technology standard. The Commission may, however, adopt technology-neutral, performance-based standards or requirements”.

¹⁴¹ See 47 C.F.R. § 4.5(a).

¹⁴² See 47 C.F.R. § 4.9.

¹⁴³ See 47 C.F.R. § 4.11.

66. In addition, the Commission has ancillary authority to ensure both that interconnected VoIP providers fulfill their duty to provide 9-1-1 services and to address major obstacles to their doing so, such as failures in underlying communications networks.¹⁴⁴ We find unpersuasive the arguments of several commenters that take the view that the Commission has no ancillary authority over VoIP service providers. CTIA argues that “the proposed rules sweep too broadly to be linked to the expressly delegated responsibility to provide 9-1-1 services, and the current record evidence does not begin to demonstrate that the proposed rules here are needed, considering the unique nature of IP networks.”¹⁴⁵ AT&T similarly argues that the *NPRM* fails to make the factual case for supporting the Commission’s ancillary authority to adopt the proposed outage requirements, contending that:

[T]he fact that networks are disrupted does not translate into an inability to offer 911 service. In brief, networks are temporarily disrupted, the disruption is corrected, and service continues. There is nothing in extending the Part 4 rules that will change that fact. Indeed, Congress did not expect, and the Commission cannot ensure, that networks over which 911 Services ride will never be disrupted. And the imposition of outage reporting obligation will not of themselves [sic] effect any changes in the way VoIP Providers provision their services, in general, or 911 Services, in particular.¹⁴⁶

67. Verizon makes similar arguments that the Commission has provided no explanation regarding how its proposed requirements would result in ensuring that VoIP providers meet their statutory duty to provide 9-1-1 service.¹⁴⁷ We have done so here. The relationship between network reliability and reliable 9-1-1 service is clear; without reliable network operations, there can be no reliable 9-1-1 service. As explained throughout this decision, reporting obligations act as a critical element to enable the Commission to identify and evaluate lapses in the provision of 9-1-1 service in order to enable providers to meet their obligations under the statute. Indeed, as a general matter, the Commission regularly imposes reporting requirements on its regulatees to ensure compliance with statutory and regulatory obligations.¹⁴⁸

¹⁴⁴ Under the definition of ancillary authority recently stated by the U.S. Court of Appeals for the District of Columbia Circuit, it is clear that 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.” *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)). The provision of interconnected VoIP is “communication by wire or radio” within the general jurisdictional grant of section 2 of the Act. 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). Further, collecting outage information from interconnected VoIP providers as adopted here 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. *See supra* notes 125, 127, and 128 and accompanying text.

¹⁴⁵ CTIA Comments at 14.

¹⁴⁶ AT&T Comments at 4.

¹⁴⁷ Verizon Comments at 34. Verizon also claims that there is a lack of evidence that interconnected VoIP service providers experience recurring, widespread outages, and that there is evidence showing that interconnected VoIP service providers employ protective measures to prevent outages from occurring and to minimize any impact on customers. *Id.* at 34-35.

¹⁴⁸ *See, e.g.*, note 111 *supra* (noting extension of CPNI requirements to interconnected VoIP service providers, and adoption of annual certification requirement); *see also, e.g.*, 47 C.F.R. § 73.3615 (requiring that broadcasters (continued...))

And the imposition of such reporting requirements in this instance is appropriate not only to enable the Commission to ensure that providers are complying with their legal obligations, but also to enhance the reliability of such service industry-wide.

D. Interconnected VoIP Service Providers – Outage Metrics and Thresholds

1. Facilities-Based vs. Non-Facilities-Based Interconnected VoIP Services

68. As discussed below, we conclude that the outage reporting requirements adopted herein should apply to both facilities- and non-facilities-based interconnected VoIP services.

69. *Proposal.* As the Commission has recognized, interconnected VoIP services increasingly are viewed by consumers as a substitute for traditional telephone service.¹⁴⁹ As of December 31, 2010, 31 percent of the more than 87 million residential telephone subscriptions were provided by interconnected VoIP providers.¹⁵⁰ But unlike legacy telephone service, 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. Accordingly, in the *NPRM* we proposed to extend our outage reporting rules to both facilities-based and non-facilities-based interconnected VoIP service providers – just as 9-1-1 service requirements apply to these providers.¹⁵¹ Both groups are subject to the E9-1-1

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annually file Ownership Report FCC Form 323); 47 C.F.R. §§ 1.2110(n) (requiring that wireless licensees that have been granted designated entity (DE) status annually certify that its DE status remains valid).

¹⁴⁹ 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 ¶ 210 n.670 (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).

¹⁵⁰ See *Local Telephone Competition: Status as of December 31, 2010*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission (Oct. 2011), Figure 2 - Wireline Retail Local Telephone Service Connections by Technology and Customer Type as of December 31, 2010, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2011/db1007/DOC-310264A1.pdf (last visited Feb. 3, 2012). See *supra* note 6 and accompanying text.

¹⁵¹ 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 *Local Telephone Competition: Status as of December 31, 2010*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission (Oct. 2011), Figure 5 – Interconnected VoIP Subscribership by Reported Service Features as of December 31, 2010. Approximately 15 percent of the 31.7 million total interconnected VoIP subscriptions reported for December 2010 was sold as stand-alone service by providers that are not incumbent local exchange carriers, including some facilities-based providers, such as cable companies and also “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- (continued....)

obligations in Part 9 of the rules.

70. *Comments.* Several commenters agree that, if the Commission adopts rules extending outage reporting to interconnected VoIP services, the rules should apply equally to both facilities-based and non-facilities-based interconnected VoIP services. For example, NASUCA and the New Jersey Division of Rate Counsel take this position as both types of VoIP services are already subject to 9-1-1 service obligations.¹⁵² Comcast points out that other interconnected VoIP providers, whether facilities-based or non-facilities-based, similarly hold out their services as replacements for traditional voice services and promote the 9-1-1 capabilities of their services. Comcast maintains that, like their facilities-based competitors, non-facilities-based providers are in the best position to determine when their services experience an outage. Therefore, Comcast supports the Commission's efforts to extend reporting requirements to these services.¹⁵³

71. Some commenters argue against inclusion of non-facilities-based, interconnected VoIP services. For example, Vonage, which provides services that ride "over the top" of the public Internet and its end-users' broadband connections, argues that the Commission should not require interconnected VoIP providers to report on outages occurring on other providers' networks (such as the public Internet and their subscribers' broadband services providers' networks), because it and other similarly situated providers have no visibility into other providers' networks.¹⁵⁴ TIA and MegaPath, Inc. (MegaPath) similarly argue that non-facilities based interconnected VoIP service providers should be responsible for reporting an "outage" only of their own service components.¹⁵⁵ The VON Coalition states that for many VoIP providers, infrastructure and interconnected VoIP are not inherently linked.¹⁵⁶ Vonage uses the example that it knows at all times the status of its own network elements. However, according to Vonage, it cannot monitor the underlying broadband networks over which its service travels any more than it can monitor the status of the PSTN networks to which its service connects.¹⁵⁷

72. *Discussion.* We adopt our proposal to extend the outage reporting rules to both facilities-based and non-facilities-based interconnected VoIP service providers.¹⁵⁸ We agree with NASUCA and Comcast that we should extend outage reporting rules to both facilities-based and non-facilities-based interconnected VoIP service providers, because both groups of providers are subject to the same statutory and regulatory duties to provide E9-1-1, and subscribers of non-facilities-based interconnected VoIP services should benefit from our work with industry to ensure robust access to emergency services just as subscribers of facilities-based interconnected VoIP and traditional services do.

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enabled services over these managed networks, including voice and video services that are distinct from the high-speed Internet access service.

¹⁵² NASUCA Comments at 6.

¹⁵³ Comcast Comments at 2-3. Comcast explains that "[T]he fact that over-the-top providers do not control the underlying networks does not jeopardize their ability to detect when a subscriber's service is down. A variety of important components, such as applications, soft switches, and gateways, do fall within the control of the service provider, whether over-the-top or facilities-based. When a customer of an over-the-top interconnected VoIP service attempts to complete a call, the service provider makes routing decisions without the input, or even the knowledge, of the underlying network operators." *Id.* at 3.

¹⁵⁴ Vonage Comments at 4.

¹⁵⁵ MegaPath Comments at 8; TIA Comments at 6.

¹⁵⁶ VON Coalition Comments at 1.

¹⁵⁷ Vonage Reply Comments at 3.

¹⁵⁸ Included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

73. We acknowledge that there are relevant technical differences between facilities-based and non-facilities based interconnected VoIP services. TIA and other non-facilities-based interconnected VoIP providers state that they should only be responsible for reporting outages on service components over which they have control, and maintain that non-facilities-based interconnected VoIP service providers are unable to observe the inner workings of other providers' networks.¹⁵⁹ Because of its inability to see into underlying broadband networks, Vonage states that it may not be technically feasible for non-facilities-based interconnected VoIP service providers to comply with mandatory reporting of outages of such networks.¹⁶⁰

74. Therefore, we require non-facilities-based VoIP service providers to report service outages that involve facilities that they own, operate, lease, or otherwise utilize. Our intention is that non-facilities-based VoIP providers report service outages that meet the threshold to the extent that they have access to information on service outages affecting their customers. As both facilities- and non-facilities-based interconnected VoIP providers are able to use NMS to determine the connectivity of their end-devices,¹⁶¹ we expect that they will be able to report on the loss of service and/or connectivity to their customers' terminals. VoIP terminals are IP-enabled, thus, they also may be polled with Internet Control Message Protocol (ICMP) and SNMP polls or GET/TRAP messages, keep alive mechanisms, *etc.* The non-facilities VoIP providers may not be able to tell where connectivity has failed if the failure has occurred in another provider's network which the non-facilities-based provider uses to deliver its service, but it can tell that its call management (SIP Proxy, Call Manager, *etc.*) cannot reach the end-user devices, and thus, an outage has occurred that affects its customers. They should be able to report significant outages where their call management systems have lost connectivity to their customers' end-user devices. Such situations may be coded in a manner such that the "outage cause" or other reporting parameter indicates that it is a failure outside the control of the non-facilities-based VoIP provider. This is important because, if a broadband data network that the non-facilities-based interconnected VoIP provider uses to deliver its service fails, the Commission will not have any visibility that the data service failure also resulted in the loss of non-facilities interconnected VoIP and E9-1-1 services that ride "over-the-top." Also, even where broadband networks provide facilities-based VoIP service, there will still be a number of end-users that will use a non-facilities-based interconnected VoIP service instead of the broadband service associated with the facilities-based interconnected VoIP service provider. Thus, the Commission would not know the true loss of voice service to end-users, as it is actually facilities-based plus non-facilities-based outages that should be counted. Thus, we will require both facilities-based and non-facilities-based interconnected VoIP to report service outages. This type of reporting will allow the Commission to determine the true impact and scope of the outage and allow a cross-check on significant outage reporting at the control plane (call control) and data plane (call path – public Internet).

2. Definition of Outage of Interconnected VoIP Service

75. As set forth below, we conclude that the current Part 4 definition of "outage" should apply also to outages of interconnected VoIP service.

76. *Proposal.* 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 communication

¹⁵⁹ MegaPath Comments at 8; TIA Comments at 6; Vonage Comments at 4.

¹⁶⁰ Vonage Reply Comments at 3.

¹⁶¹ At the FCC Workshop, Mark Adams stated: "So at a basic level, we obviously do device-level monitoring, and based on the types of devices, we know generally – not always, but generally – is it completely service-affecting, or is it going to result in some kind of degradation. So, we do device-level monitoring. We monitor our end points for on or off status right through the switches, and through our cable modems." Mark Adams, Executive Director, Technology Operations, Cox Communications, *FCC Workshop*, Transcript at 106.

as a result of failure or degradation in the performance of a communications provider's network.”¹⁶² Our current rules tailor the definition of a reportable significant degradation to communications over cable, telephony carrier tandem, satellite, SS7, wireless, or wireline facilities.¹⁶³ Broadband networks operate differently than legacy networks, so the impact of outages is likely to be different. This difference does not appear to require a different definition of outage for reporting purposes, and in the *NPRM*, the Commission proposed to apply the existing definition of outage to interconnected VoIP, tailored to the characteristics of the broadband technologies. In the *NPRM*, the Commission also proposed a broad standard of a “loss of generally-useful availability and connectivity” to represent the degradation in the performance of a communication provider’s network and sought comment on packet loss, round-trip latency, and jitter as appropriate metrics to trigger the outage reporting.¹⁶⁴

77. *Comments.* Many commenting parties support applying the current Part 4 definition of an “outage” to interconnected VoIP service providers.¹⁶⁵ Other parties raise concerns with the definition of “outage.” CTIA is concerned about a regulatory scheme for VoIP service that would treat perceived or actual performance degradation as a reportable outage, and argues that this would diverge from current wireline and wireless outage reporting requirements that are based on actual loss of service to customers.¹⁶⁶ MegaPath states that the current outage definition is overly broad and fails to take into

¹⁶² 47 C.F.R. § 4.5(a).

¹⁶³ 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 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 any 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).

¹⁶⁴ *NPRM*, 26 FCC Rcd at 7178-79 ¶ 27.

¹⁶⁵ *See, e.g.*, XO Comments at 10.

¹⁶⁶ CTIA Comments at 8.

account the unique characteristics of the present broadband network. MegaPath further argues that “[R]equiring a report whenever the backbone experiences some service degradation is overly inclusive and will not yield meaningful data or lead to discussions of the root causes for an outage.”¹⁶⁷

78. CenturyLink maintains that if the Commission extends outage reporting requirements to interconnected VoIP service providers, the definition of an interconnected VoIP outage must be limited to the complete loss of service or connectivity.¹⁶⁸ Similarly, TIA asserts that outage thresholds should be set at a significant loss of functionality for primary uses as opposed to temporary degradations in service that still allow for basic uses.¹⁶⁹

79. Several commenting parties do not support the concept of “loss of generally-useful availability or connectivity” in differentiating among outages. For example, MetroPCS states that because of how the Internet is designed, the cause of service degradations may not be clearly identifiable, particularly in a limited timeframe. MetroPCS argues that a broad standard of “loss of generally-useful availability and connectivity” exacerbates the problem of precisely associating an outage with underlying network conditions. Further, MetroPCS argues that the degradation of a real-time voice service immediately and negatively impacts the service experienced by the user, but that a “loss of generally-useful availability and connectivity” can mean many things, including a five-second delay, as an email is rerouted, which may not be noticeable to the end-user.¹⁷⁰ Similarly, Vonage argues the Commission should not require service providers trigger outage reporting based on “loss of generally-useful availability or connectivity.” Vonage agrees with CTIA’s arguments that such reporting is vastly different from that required of wireline and wireless communications providers. Vonage further argues that the measures proposed in the *NPRM* – packet loss, latency, and jitter – do not relate to actual outages, but are instead measures of call quality. Vonage further argues that the collection of such quality of service information simply will not indicate when a VoIP customer loses the ability to make an emergency call. Therefore, Vonage contends that an outage should include only the complete loss of ability to complete calls.¹⁷¹

80. *Discussion.* We apply to interconnected VoIP services¹⁷² the current Part 4 definition of an “outage” as “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.”¹⁷³ We note, however, that the triggering criteria for a reportable “outage” for interconnected VoIP outage reporting purposes that we adopt today excludes the concept of a “loss of generally-useful availability and connectivity” proposed in the *NPRM*¹⁷⁴ based on performance degradations. As discussed above, we defer a decision on that issue.¹⁷⁵ For the purposes of the rules we adopt today, a “significant degradation” resulting in “the complete loss of service or connectivity to customers” is a reportable outage if it meets the reporting criteria and thresholds.

¹⁶⁷ MegaPath Comments at 8.

¹⁶⁸ CenturyLink Comments at 6.

¹⁶⁹ TIA Comments at 6.

¹⁷⁰ MetroPCS Comments at 10-11.

¹⁷¹ Vonage Reply Comments at 6.

¹⁷² Included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

¹⁷³ 47 C.F.R. § 4.5(a).

¹⁷⁴ *NPRM*, 26 FCC Rcd at 7178-79 ¶ 27.

¹⁷⁵ *Id.*

81. Although similar arguments in favor of a more-narrow definition of an outage were raised and rejected by the Commission in 2004 when the existing Part 4 Rules were adopted,¹⁷⁶ we are persuaded by the recent arguments of the parties that the proposed reporting of an interconnected VoIP outage be based on the “the complete loss of service or connectivity to customers.” We agree with Vonage’s rationale that triggering the reporting of an interconnected VoIP outage based on “the loss of a user’s ability to make or receive a call,” as opposed to the “loss of generally-useful availability and connectivity,” as measured by packet loss, latency, and jitter standards, would avoid the need to revise [packet loss, latency, and jitter] standards as providers continue to improve performance.¹⁷⁷

82. Furthermore, we accept MetroPCS’s argument that determining what constitutes a “loss of generally-useful availability and connectivity” in a broadband environment (which includes the environment in which interconnected VoIP service operates) is considerably more complicated than in the legacy network context. In a broadband environment, voice is a real-time application that utilizes broadband connectivity and is more sensitive to network impairments than non-real-time applications such as email.¹⁷⁸ Although we believe performance degradations do affect the ability of facilities-based and non-facilities-based interconnected VoIP service providers to establish and maintain 9-1-1 calls, adopting a bright-line reporting criteria reduces the burden on the providers while, we expect, delivering to us the information we need. Should the Commission determine in the future that a more nuanced definition of “outage” is needed, the Commission can revisit the issue at a later time.

3. Reporting Thresholds

83. As discussed below, we conclude that the outage reporting thresholds for interconnected VoIP service outages should be similar to the existing Part 4 wireline and wireless communications service outage reporting thresholds. As indicated above, we address here only those outages that result from a complete loss of service and not those that are the result of performance degradation.

84. *Proposal.* Based on how interconnected VoIP service is typically configured and provided, the *NPRM* proposed 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.¹⁷⁹

85. *Comments.* Although NASUCA comments that it is plausible that industry would be tracking these aspects of their operations in order to compete effectively in relevant markets,¹⁸⁰ most industry commenters oppose the adoption of any performance degradation metric (e.g., packet loss,¹⁸¹

¹⁷⁶ See *2004 Part 4 Order and FNPRM*, 19 FCC Rcd at 16862 ¶ 55 n.182.

¹⁷⁷ Vonage Comments at 4.

¹⁷⁸ The VON Coalition states that only packet loss in the 5-7 percent range – as opposed to the proposed 1 percent threshold - would degrade service such that VoIP service would be significantly impaired, and similarly, only latency in the range of 250-300 ms would seriously impair service. See VON Coalition Comments at 9-10.

¹⁷⁹ See *NPRM*, 26 FCC Rcd at 7200, App. A, proposed rule § 4.9.

¹⁸⁰ NASUCA Reply Comments at 30.

¹⁸¹ See RFC 2680 A One-way Packet Loss Metric for IP Performance Metrics (IPPM) (Sept. 1999), available at https://datatracker.ietf.org/doc/rfc2680/?include_text=1 (last visited Feb. 3, 2012).

latency,¹⁸² and jitter¹⁸³) as a triggering mechanism for a reportable outage. The parties argue the reporting of outages should be based on actual loss of service rather than performance degradation measurements that were proposed in the *NPRM*.¹⁸⁴ AT&T, for example, states that the Commission should develop an outage reporting threshold that incorporates some of the elements of existing wireline reporting standards and, at the same time, eliminates unrealistic reporting deadlines and unnecessary and duplicative reports.¹⁸⁵ It argues that this standard is appropriate because it is consistent with what is used now for traditional telephone service under Part 4 of the rules, which is easier to apply operationally (as many providers are positioned to provide similar reporting today), and competitively fairer (as interconnected VoIP service is not held to a substantially different standard than is legacy telephony service).¹⁸⁶

86. NENA agrees with the comments of AT&T and others who would have the Commission cast the outage reporting requirements in terms of “actual” service interruption, rather than on performance degradation metrics. However, NENA recognizes that some threshold of latency, speed reductions, or jitter can create a “soft outage” condition, under which a customer still technically has service, but cannot effectively use that service.¹⁸⁷

87. Other parties argue that requiring outage reports based on quality of service measurements would greatly increase regulatory compliance burdens and expand the obligations of interconnected VoIP service providers beyond those that apply to providers of circuit-switched telephony under the current Part 4 Rules.¹⁸⁸ Specifically, ACA notes the outage reporting requirements proposed in the *NPRM* are likely to be disproportionately burdensome on smaller providers, particularly the obligation to report outages affecting “special facilities.” ACA explains that under the proposed rules,¹⁸⁹ a small VoIP provider would have to report any outage at a “special facility” that occurs for even a very short time. ACA states that most small operators’ networks cannot monitor whether a specific user -- whether a

¹⁸² See RFC 2681 A Round-Trip Delay Metric for IPPM (Sept. 1999), available at <https://datatracker.ietf.org/doc/rfc2681/> (last visited Feb. 3, 2012).

¹⁸³ See RFC 3393 IP Packet Delay Variation Metric for IPPM (Nov. 2002), available at <http://tools.ietf.org/html/rfc3393> (last visited Feb. 3, 2012). See also RFC 3550 RTP – A Transport Protocol for Real-Time Applications (Jul. 2003), available at <http://www.ietf.org/rfc/rfc3550.txt> (last visited Feb. 3, 2012) for a discussion on estimating the interarrival jitter.

¹⁸⁴ See, e.g., ACA Comments at 1, 7-10; AT&T Comments at 23-24; ATIS Comments at 11-13; CenturyLink Comments at 6-7; CTIA Comments at 8-9; MegaPath Comments at 8; Sprint Comments at 6-8; T-Mobile Comments at 10-12; Time Warner Comments at 4-6; Vonage Comments at 7-8; XO Comments at 3, 10; Wireless Internet Service Providers Association (WISPA) Comments at 5; See also National Emergency Number Association (NENA) Reply Comments at 2; Sprint Reply Comments at 6; T-Mobile Reply Comments at 7-8; Vonage Reply Comments at 7-8, 11; XO Reply Comments at 1.

¹⁸⁵ AT&T Reply Comments at 8-9. AT&T further proposes that all interconnected VoIP providers submit electronically a Final Report within 30 days of discovering that they have experienced on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 120 minutes’ duration: (1) of a non-redundant VoIP network element; (2) that potentially isolates subscribers’ service for at least 900,000 user minutes; or (3) potentially affects a 911 special facility (as defined in paragraph (e) of Section 4.5). See AT&T Comments at 23-24.

¹⁸⁶ AT&T argues further that this standard comports with the Commission’s stated aim of addressing outages that have the potential of affecting consumers’ access to emergency services and that “it provides the Commission with real *outage* data as opposed to flooding the Commission with useless (i.e., non-consumer affecting) quality of service information.” AT&T Comments at 24.

¹⁸⁷ NENA Reply Comments at 2.

¹⁸⁸ ACA Comments at 2-3; Comcast Comments at 5-7; Time Warner Comments at 5; USTA Comments at 1-2.

¹⁸⁹ See *NPRM*, 26 FCC Rcd at 7200 App. A, proposed rule § 4.9.

household or “special facility” -- has experienced an outage unless and until contacted by the user with a trouble report. The cost associated with requiring small operators with few employees and very minimal operating budgets to update their networks and plants to allow outage monitoring and reporting would impose an undue burden according to ACA.¹⁹⁰

88. With respect to reporting outages or service degradation as a result of a major facility failure (e.g., Call Agent, Session Border Controller, Signaling Gateway, CSCF, HSS), Verizon states that it deploys many of these elements in a redundant, diverse manner such that an outage on a given network element may have no impact on a subscriber’s ability to establish and maintain a channel of communications.¹⁹¹ Similarly, AT&T states that, if Part 4 Rules are extended to interconnected VoIP service providers, those service providers should be required to report only those outages or service degradations resulting from major facility failures of non-redundant VoIP network elements.

89. *Discussion.* We adopt outage reporting thresholds for interconnected VoIP service outages similar to the existing Part 4 wireline and wireless communications service outage reporting thresholds. Specifically, we apply to interconnected VoIP service providers¹⁹² the obligation to report when they have experienced, on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 30 minutes duration: (1) that potentially affects at least 900,000 users; (2) that potentially affects any special offices and facilities (in accordance with paragraphs (a) - (d) of section 4.5); or (3) that potentially affects a 9-1-1 special facility (as defined in (e) of section 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 they 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 callers to that facility.

90. We defer action at this time on the performance degradation reporting metrics and thresholds proposed in the *NPRM*.¹⁹³ Based on the record developed in response to the *NPRM*, we believe that the simpler rules we adopt today will provide a clear view into E9-1-1 compliance as well as advance the goals we have laid out above with regard to working with industry to improve performance. We also believe that the rules we adopt today are more consistent with the rules we apply to other providers under the existing rules. Therefore, we will not at this time require reporting based on packet loss, latency, or jitter. Instead, we will require the reporting of an interconnected VoIP outage based on the complete loss of service or connectivity.¹⁹⁴ We believe this approach best balances the Commission’s need for interconnected outage reporting data and is less burdensome than the reporting requirements proposed in the *NPRM*.

91. With respect to reporting outages due to major facility failures, we are persuaded by the arguments posed by the commenters and, therefore, will not at this time adopt the proposal in the *NPRM* to require outage reporting when an interconnected VoIP service experiences a major facility failure of a Call Agent, Session Border Controller, Signaling Gateway, Call Session Control Function, or Home Subscriber Server. We believe the rules, as adopted, sufficiently account for major facility failures that

¹⁹⁰ ACA Reply Comments at 5.

¹⁹¹ Verizon Comments at 18.

¹⁹² Included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

¹⁹³ *NPRM*, 26 FCC Rcd at 7200 App. A § 4.9(g).

¹⁹⁴ A complete loss of service or connectivity results when an end user is unable to establish and maintain a channel of communications as a result of failure or degradation in the performance of a communications provider’s network (an outage). See 47 C.F.R. § 4.5(a).

result in reportable outages meeting the thresholds defined. We recognize a major facility failure of a Call Agent, Session Border controller, Signaling Gateway, Call Session Control Function, or Home Subscriber Server, depending on how the interconnected VoIP service provider has engineered those major facilities, may not necessarily result in a reportable outage meeting the thresholds, and we, therefore, do not require, at this time, the reporting of outages on this basis.

4. Reporting Process for Outages of Interconnected VoIP Service

92. As set forth below, we conclude that the reporting process for significant outages of interconnected VoIP service should differ in certain respects from the proposal in the *NPRM*. Specifically, we extend the time frame for notification of an outage and reduce and the number of required submissions.

93. *Proposal.* The *NPRM* proposed to follow the current Part 4 reporting process for interconnected VoIP service providers.¹⁹⁵ Under the current rules, providers are required to notify the Commission with very basic information within two hours of discovering a reportable outage,¹⁹⁶ file an initial report within 72 hours, and file a final report within 30 days that provides detail on the outage.¹⁹⁷ Part 4 specifies the type of information that is to be included at each stage.¹⁹⁸ Final Reports must be submitted by a person authorized by the provider to submit such reports to the Commission and to bind the provider legally to the truth, completeness, and accuracy of the information contained in the report.¹⁹⁹ 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, the Initial Report. Besides timing and the content of reporting, the current NORS process provides an electronic reporting template to facilitate outage reporting by those currently subject to our Part 4 rules.²⁰⁰ In the *NPRM*, we proposed to follow the same reporting process.

94. *Comments.* The majority of parties commenting on this issue focused on the burden of (a) filing multiple reports, and (b) filing those reports while simultaneously seeking to resolve the network outage.²⁰¹ Although state government commenters generally support the proposed deadlines,²⁰²

¹⁹⁵ *NPRM*, 26 FCC Rcd at 7191 ¶ 61.

¹⁹⁶ 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”

¹⁹⁷ 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.*

¹⁹⁸ See 47 C.F.R. § 4.9.

¹⁹⁹ See 47 C.F.R. § 4.11.

²⁰⁰ 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. See http://www.fcc.gov/pshs/outage/nors_manual.pdf (last visited Feb. 3, 2012).

²⁰¹ See, e.g., AT&T Comments at 20-21 (questioning the efficacy of requiring an initial report, and urging that the first notification to the Commission of an outage be filed by the close of the next business day after the outage has been resolved); NCTA Comments at 8-9 (initial notification should be eliminated, and only two reports (one at 72 hours, the other at 30 days) ought to be required); Verizon Comments at 14-17 (The 120-minute time frame and three-tier reporting structure in the current Part 4 rules already are too burdensome).

industry commenters argue that the proposed deadlines would be too restrictive.²⁰³ Opposition to the proposed reporting timeframes centers on several arguments: reporting requires critical personnel to spend time reporting instead of fixing the underlying problem;²⁰⁴ the complexity of the network makes it too difficult to report within two hours;²⁰⁵ and, to develop best practices, the only report needed is a 30-day final report.²⁰⁶ Specifically, the ACA argues that small operators should be required to file reports only well after the incident.²⁰⁷ MetroPCS argues that requiring interconnected VoIP service providers to submit a notification within two hours of a discovered outage not only has possibility of prolonging the outage due to the nature of the requested information, but would also distract providers from what should be their number one priority – solving the problem.²⁰⁸ Verizon recommends that the process be streamlined into a two-tiered reporting process.²⁰⁹ AT&T argues that the deadline for filing the Notification should be longer than the present 120-minute requirement, and that the Initial Report requirement should not be adopted.²¹⁰

95. *Discussion.* We are persuaded by commenters' arguments to adopt a reporting process similar to NORS, but to lengthen the notification interval to allow more time for interconnected VoIP service providers to work the outage problem as opposed to reporting on the outage. We agree with MetroPCS' rationale for lengthening the initial notification in that "this change is particularly important since data networks operate differently than voice networks, and the cause of some degradations of service may not be as clearly identifiable, which can lead to inaccurate reporting, or over-reporting, under strict time constraints."²¹¹ Therefore, with respect to outages that meet the reporting threshold, a notification will be due within 24 hours of discovering that an outage is reportable and a final report within 30 days.

96. Verizon's suggested two-reporting system, in which a provider would file a notification within four hours and a final report within thirty days, makes more sense to us in situations that could have the potential to have a significant negative impact on the 9-1-1 infrastructure. A two-tier report system would still provide a measure of "situational awareness" to allow the Commission to become involved in significant outages early should it choose to do so. Final reports would still give the Commission the opportunity to obtain the full details within the same timeframe as it does so today. Yet, eliminating the initial report would reduce the providers' workloads, and if implemented in conjunction with a four-hour window for the notification, would likely still provide the Commission with valuable information at the outset of the outage.²¹²

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²⁰² MDTC Comments at 5-6; NYPSC Comments at 4-5.

²⁰³ See AT&T Comments at 21; ATIS Comments at 12-13; CenturyLink Comments at 21-22; Comcast Comments at 3-4; NCTA Comments at 8-9; Sprint Comments at 9; T-Mobile Comments at 10; Time Warner Comments at 6; Verizon Comments at 10, 14-15; VON Coalition Comments at 10-11.

²⁰⁴ See, e.g., Verizon Comments at 16.

²⁰⁵ See Comcast Comments at 3-4.

²⁰⁶ AT&T Comments at vi, 20.

²⁰⁷ ACA Reply Comments at 5-6.

²⁰⁸ MetroPCS Reply Comments at 5. See also Comcast Comments at 3-4; NCTA Comments at 8; T-Mobile Comments at 10; Verizon Comments at 14-16; VON Coalition Comments at 8.

²⁰⁹ Verizon Comments at 16.

²¹⁰ AT&T Reply Comments at 4.

²¹¹ See MetroPCS Reply Comments at 3.

²¹² Verizon Comments at 16.

97. We do not, however, adopt the 24-hour interval with respect to outages that may have a significant negative impact on the 9-1-1 infrastructure. For these outages, we adopt Verizon's suggested two-tier reporting structure and require notification for outages that may have a significant negative impact on the 9-1-1 infrastructure within four hours and a final report within 30 days. This provides a measure of "situational awareness" to allow the Commission to become involved in significant outages early should it choose to do so. Final reports would still give the Commission the opportunity to obtain the full details within the same timeframe as it does so today. Yet, eliminating the initial report would reduce providers' workloads considerably without harming the Commission's ability to react in the short term or facilitate the development and application of best practices in the long term.

98. Accordingly, the Commission adopts the following outage reporting requirements for outages of interconnected VoIP service: All interconnected VoIP service providers must submit electronically a Notification to the Commission within four hours 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 that potentially affects a 9-1-1 special facility. In such situations, they also must 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 must convey to 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. Such timing of the Notification targets conditions in which the 9-1-1 infrastructure is most likely to experience a direct, negative impact, and singles out a short Notification requirement while balancing costs and burdens.²¹³

99. Interconnected VoIP service providers who have not experienced on any facilities that they own, operate, lease, or otherwise utilize, an outage of at least 30 minutes duration that potentially affects a 9-1-1 special facility, but who have rather experienced on any facility that they own, operate, lease or otherwise utilize, an outage of at least 30 minutes duration: (a) that potentially affects at least 900,000 user minutes of interconnected VoIP service and results in complete loss of service; or (b) that potentially affects any special offices and facilities, must submit electronically a Notification to the Commission within twenty-four hours of discovering such an outage. Such timing of the Notification therefore appropriately applies a less stringent time reporting standard, recognizing that under such conditions the 9-1-1 infrastructure is less likely to experience a negative impact than described in the previous paragraph but the ability of users to make individual 9-1-1 calls may nonetheless be impaired. Accordingly, the design of the two different timing standards under the adopted reporting scheme balances different potential benefits with costs and burdens.²¹⁴

100. Finally, regardless of which of the two above conditions prompts the Notification, not later than 30 days after discovering the outage, the provider must submit electronically a Final Communications Outage Report to the Commission. Moreover, we are adopting a very similar level of specificity in reporting content and the same electronic reporting processing as is required by NORS, including utilizing an electronic reporting template to show the various types of information that should be reported by providers.

²¹³ Examples of outages in which the interconnected VoIP service provider must submit an electronic Notification to the Commission within four hours include: (1) loss of all facilities (*i.e.*, no reroute) connecting a selective router to a PSAP; and (2) complete loss of the ability to provide location information (*i.e.*, Automatic Location Information) for interconnected VoIP calls.

²¹⁴ Examples of outages in which the interconnected VoIP service provider must submit an electronic Notification to the Commission within twenty-four hours include: (1) complete loss of an access router; and (2) loss of all facilities connecting the access router to the backbone network. These two examples illustrate that the outage would affect all interconnected VoIP calls, not just calls to 9-1-1.

101. The process we adopt today for reporting significant outages of interconnected VoIP service reduces the burden on providers from that proposed in the *NPRM*. Reducing the number of reports from three to two and extending the time frame for reporting will provide the Commission with the information it needs while reducing the reporting burden on the providers. In addition, we believe it is likely that most interconnected VoIP service providers currently collect information on significant outages in the ordinary course of their business in order to serve their customers effectively.²¹⁵ Therefore, on balance, we conclude that the reporting burden is minimal and well-justified by the benefits to 9-1-1 reliability described above.

E. Application of Part 4 Rules to Voice Service Provided Using New Wireless Spectrum Bands

102. In the discussion below, we clarify that Part 4 of the rules currently covers all providers of CMRS voice (and paging) service regardless in which spectrum band the service is provided and that the process that applies to reporting outages of these services should be the process in the current Part 4 rules.

1. Clarification of Application of Part 4

103. *Proposal.* In the *2004 Part 4 Order and FNPRM*, 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.²¹⁶ 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 Order and FNPRM* 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 Order and FNPRM*.²¹⁷ In the *NPRM*, we sought comment on whether we should

²¹⁵ See *supra* notes 103 and 106 and accompanying text (discussion of several commenters on information collected. No commenter claims an undue burden will result from the information collection requirement adopted here). In the *2004 Part 4 Order and FNPRM*, 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 16912-14 ¶ 166-69; see also *1992 Part 4 Report and Order*, 7 FCC Rcd at 2013 ¶17.

²¹⁶ See *2004 Part 4 Order and FNPRM*, 19 FCC Rcd at 16922, App. B. 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.

²¹⁷ 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 . . ." *2004 Part 4 Order and FNPRM*, 19 FCC Rcd at 16855 ¶ 46. 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*, ET Docket No. 04-35, *Notice of* (continued....)

amend Section 4.3(f) to clarify and reflect this meaning.²¹⁸ For instance, we asked if the rule should 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.²¹⁹

104. *Comments.* MetroPCS argues that competition and innovation are best served by not extending the current outage reporting rules to new spectrum bands or technologies, including AWS and 700 MHz.²²⁰ It, however, recognizes that if the Commission were to adopt MetroPCS's recommendation to not extend the current *Part 4 Rules* to newly licensees in the AWS and 700 MHz spectrum bands, an unlevel wireless service provider playing field may result.

105. The WCS Coalition also argues that AWS, 700 MHz, WCS and other similarly situation licensees be exempted from new Part 4 outage reporting requirements until such time as they are required to meet their initial performance or substantial service obligations under their service-specific rules.²²¹

106. *Discussion.* We believe that the existing rules²²² apply to wireless service providers including Commercial Mobile Radio Service communications providers that use cellular architecture and CMRS paging providers.²²³ That includes AWS and 700 MHz, as well as Personal Communications Service (PCS), Broadband Radio Service (BRS) that elect common carrier service, Educational Broadband Service (EBS) that elect common carrier service, and Wireless Communications Service (WCS) wireless service providers, *inter alia*, operating as CMRS communications providers that use cellular architecture or as CMRS paging providers, are subject to the outage reporting obligation. We also believe that the *2004 Part 4 Order and FNPRM* extended the scope of outage reporting to include all non-wireline providers, including new technologies developed after the adoption of the *2004 Part 4 Order and FNPRM*.²²⁴ The *2004 Part 4 Order and FNPRM*²²⁵ included an illustrative list of wireless services subject to the outage reporting obligation. To eliminate any potential for confusion, we amend the rule by eliminating the specific example services. In doing so, we will avoid any potential for

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Proposed Rulemaking, 19 FCC Rcd 3373, 3375 ¶1, n.1 (2004). 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.'

Id. at 3381 ¶14 n.30.

²¹⁸ *NPRM*, 26 FCC Rcd at 7188-89 ¶ 55.

²¹⁹ *Id.*

²²⁰ MetroPCS Comments at 20.

²²¹ Wireless Communication Service Coalition Comments at 3.

²²² *See* 47 C.F.R. § 4.3(f).

²²³ Included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

²²⁴ *See supra* note 217 and accompanying text.

²²⁵ *See* 47 C.F.R. § 4.3(f).

confusion as to the rule's scope as new spectrum bands are authorized and/or reallocated.

107. We are not persuaded by commenters' arguments that AWS and 700 MHz services should be exempt from outage reporting requirements. As MetroPCS acknowledges, to provide an exemption for AWS and 700 MHz would lead to an unlevel playing field among competing mobile service providers. Moreover, these newer wireless technologies are forming the core of major deployments whereby an outage could impact an increasingly significant number of users.²²⁶

2. Reporting Process

108. *Discussion.* We conclude that the reporting process as reflected in the existing reporting structure in NORS, including the timing of outage reports, should be the same for AWS and 700 MHz wireless service providers as for the other wireless service providers. Since we have clarified that Section 4.3(f) should be read broadly to include such services as AWS and 700 MHz as among those wireless service providers covered by the Part 4 reporting obligations,²²⁷ it follows that the technical requirements for making the reports used for these other wireless service providers should also apply to AWS and 700 MHz service providers. We see no technical or policy reason that would warrant different treatment.

IV. SHARING OF INFORMATION AND CONFIDENTIALITY

109. As discussed below, we apply the same confidential treatment and restricted information sharing to reports of interconnected VoIP service outages as currently apply to outage reports of services already subject to Part 4 of the rules.

110. *Proposal.* The *NPRM* proposed to treat outage reports filed with respect to interconnected VoIP service as presumptively confidential, as is the case for outage reports currently filed under Part 4.²²⁸ The *NPRM* also sought comment on making aggregated information across companies public (*e.g.*, total number of incidents by root cause categories), and whether the Commission should share this new outage information with other Federal agencies on a presumptively confidential basis,²²⁹ as it currently does under Part 4 with respect to legacy technologies.²³⁰

111. *Comments.* Most commenters addressing the issue support treating reported information as presumptively confidential.²³¹ ATIS, AT&T, CenturyLink, and New York PSC support the

²²⁶ See Matt Buchanan, *Verizon's \$9.36 Billion 700 MHz Plans: High-Speed 4G LTE Network Up and Running before AT&T*, Gizmodo, April 4, 2008, available at <http://gizmodo.com/376103/verizons-936-billion-700mhz-plans-high+speed-4g-lte-network-up-and-running-before-att> (last visited Feb. 7, 2012).

²²⁷ See *supra* notes 216-217 and accompanying text.

²²⁸ *NPRM*, 26 FCC Rcd at 7192 ¶ 66. 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.

²²⁹ 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 the [Communications] Act, as may be necessary in the execution of its functions”).

²³⁰ *NPRM*, 26 FCC Rcd at 7192 ¶ 66. We note that, in its *ex parte* filing on February 8, 2012, NARUC requests that the Commission provide State commissions with an opportunity to have direct and immediate access to outage reporting data and to all outage reports filed by interconnected VoIP service providers. See NARUC February 8, 2012 Ex Parte Filing. NARUC's request is beyond the scope of this proceeding.

²³¹ ATIS Comments at 19; AT&T Comments at 22; CenturyLink Comments at 22; NYSPSC Comments at 2-3, 7; T-Mobile Comments at 12; TIA Comments at 11; Time Warner Comments at 6, n.14.

Commission's sharing of information with other Federal agencies.²³² AT&T, CenturyLink, ATIS, and WISPA do not oppose the public disclosure of aggregated outage information provided the individual service provider data will not be identified,²³³ while the Telecommunications Industry Association (TIA) opposes the public disclosure of the aggregated information, pointing out that the Commission has acknowledged that "disclosure of outage reporting information to the public could present an unacceptable risk of more effective terrorist activity,"²³⁴ and that the record on outage reporting has clearly established that reports should be protected by the Freedom of Information Act.²³⁵ Also, TIA believes that the record reflects wide consensus for maintaining confidentiality for data submitted through the NORS system.²³⁶

112. *Discussion.* Consistent with Section 4.2 of the Rules that affords a presumption of confidentiality to outage report filed pursuant to Part 4 of the Rules, we direct that individual outage reports of interconnected VoIP service providers also be treated on a presumptively confidential basis, that sharing of such reports with other Federal agencies, as needed, be conducted on the same basis, and that aggregated information across providers may be publicly reported. As addressed in the *2004 Part 4 Order and FNPRM*, the Commission makes outage reports available to the U.S. Department of Homeland Security (DHS), pursuant to the authority of DHS under the Homeland Security Act of 2002.²³⁷ Sharing confidential materials with other Federal agencies is governed by Section 0.442 of the Commission's rules, which provides that the Commission may share with other Federal agencies materials received under a request for confidential treatment or that are presumptively confidential, and the confidentiality of the records travels with the records.²³⁸

113. Publicly reported aggregate data would have the benefit of increasing the public dialogue on the reliability and emergency preparedness of interconnected VoIP service provider while imposing no

²³² AT&T Comments at 22; CenturyLink Comments at 23; NYSPSC Comments at 7-8; T-Mobile Comments at 12; VON Coalition Comments at 11, n.11. *See also* NASUCA Reply Comments at 15-19 (arguing that information should not be considered presumptively confidential, and noting MDTC's comment that state and local entities often serve as the first line of defense for public safety and emergency situations, where delays in acquiring outage data carry serious consequences. *Id.*, *citing* MDTC Comments at 8-9).

²³³ AT&T Comments at 22; ATIS Comments at 19; CenturyLink Comments at 22; WISPA Comments at 7. *See also* T-Mobile Comments at 12; TIA Comments at 11-12; Time Warner Comments at 6, n.14 (all generally opposing direct release of information).

²³⁴ TIA Comments at 11, *citing 2004 Part 4 Order and FNPRM*, 19 FCC Rcd at 16833 ¶ 3..

²³⁵ *Id.*

²³⁶ *Id.* *citing* California Public Utilities Commission Comments, 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 9; District of Columbia Public Service Commission Comments, 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; Comments of Massachusetts Department of Telecommunications and Cable, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, 09-137 (filed Aug. 16, 2010), New York Public Service Commission Comments, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, at 3 (filed Aug. 2, 2010); Qwest Communications Comments, ET Docket No. 04-35, WC Docket No. 05-271, GN Docket Nos. 09-47, 09-51, and 09-137, at 12-14 (filed Aug. 2, 2010).

²³⁷ *See 2004 Part 4 Order and FNPRM*, 19 FCC Rcd at 16856 ¶47 n.143.

²³⁸ 47 C.F.R. §0.442. Section 0.442 is based on 44 U.S.C. § 3510, which provides that, if information obtained by an agency is released by that agency to another agency, all the provisions of law (including penalties) that relate to the unlawful disclosure of information apply to the officers and employees of the agency to which information is released to the same extent and in the same manner as the provisions apply to the officers and employees of the agency which originally obtained the information. 44 U.S.C. § 3510(b)(1).

additional cost or burden on the providers given that their identities would not be revealed. The Commission order to which TIA refers in support of its contention that aggregated data should not be publicly reported, does not address the release only of aggregated data contemplated here, but rather addresses the release of outage reporting information in an unredacted form, which could reveal potentially harmful details about particular network vulnerabilities if the information disclosed were to include a provider's name, specific geographic location(s), particular network characteristics and limitation, *etc.*²³⁹ Our action to allow public reporting of aggregated information across providers does not extend to such raw data. On the narrower issue of aggregated data, most commenters addressing the issue believe that the information should be publicly released. Indeed, our approach to confidentiality here is identical to the approach we have taken with regard to outage reports from traditional providers subject to the existing Part 4 rules; we are aware of no problems resulting from the current approach.

V. CONTINUING VOLUNTARY DIALOGUE REGARDING INTERNET SERVICE PROVIDER OUTAGE ISSUES

114. The *NPRM* addressed whether the Commission should extend its outage reporting requirements to significant outages of broadband Internet service, and if so, what outage metrics and thresholds should apply.²⁴⁰ We believe that the technical issues involved in identifying and reporting significant outages of broadband Internet services require further study. The record in this proceeding reflects a willingness on the part of broadband Internet service providers to participate in a voluntary process to improve the Commission's understanding of the underlying technical issues associated with broadband Internet service outages to assist public safety and first responders in protecting the American people.²⁴¹

VI. CONCLUSION

115. For the reasons stated above, we adopt outage reporting requirements for interconnected VoIP service providers. We conclude that this action will best serve the public interest by enabling the Commission to obtain the necessary information regarding services disruptions in an efficient and expeditious manner. This action addresses the need for rapid, full, and accurate information on service disruptions that could affect homeland security, public health and safety, including the reliability of the Nation's 9-1-1 system, as well as the economic well being of our Nation. This action takes into account the increasing national trend in greater VoIP service usage and its potential impact on the Nation's 9-1-1 infrastructure, and the increasing importance of IP networks, on which U.S. consumers increasingly rely for their safety and well being. We make these additions to our existing communications outage-reporting requirements to fulfill the objectives and mandates of the Communications Act.

²³⁹ *2004 Part 4 Order and FNPRM*, 19 FCC Rcd at 16833 ¶ 3.

²⁴⁰ *See NPRM*, 26 FCC Rcd at 26 FCC Rcd at 7180-90 (2011) (*NPRM*).

²⁴¹ *See, e.g.*, ATIS Comments at 16 (observing that a voluntary reporting program would be flexible and collaborative); AT&T Comments at 17-18 (stating that a voluntary program would better allow the Commission to ascertain what actual reliability issues may exist); CenturyLink Comments at 20-21 (engaging affected broadband ISPs in a collaborative effort to determine relevant metrics and thresholds for defining ISP network outages will yield more productive results); Sprint Comments at 3 (establishing a voluntary pilot program is preferable to mandatory reporting); T-Mobile Comments at 10 (positing that voluntary reporting based on metrics developed by industry groups and standards bodies provides the necessary flexibility to obtain outage information best suited to emerging technologies); TIA Comments at 5 (noting that intra- and inter-industry voluntary efforts are already currently underway that adequately address reliability and resiliency concerns, including best practices, standards, and public-private efforts) (footnote omitted); Verizon Comments at 8 (noting that to the extent the Commission may require additional data on broadband reliability to perform its statutory obligations, the Commission could promote the industry's establishment of a voluntary IP outage reporting program).

VII. PROCEDURAL MATTERS

A. Accessible Formats

116. To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

B. Final Regulatory Flexibility Analysis

117. As required by the Regulatory Flexibility Act of 1980, *see* 5 U.S.C. § 604, the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) of the possible significant economic impact on small entities of the policies and rules addressed in this document. The FRFA is set forth in Appendix B.

C. Paperwork Reduction Act Analysis

118. We analyzed this Report and Order with respect to the Paperwork Reduction Act of 1995 (“PRA”)²⁴² and determine it contains modified information collection requirements.²⁴³ The Report and Order contains new information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law No. 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under section 3507(d) of the PRA.²⁴⁴ The Commission, as part of its continuing effort to reduce paperwork burdens, invites OMB, the general public, and other interested parties to comment on the information collection requirements contained in this proceeding. In addition, we note that pursuant to the Small Business Paperwork Relief Act of 2002,²⁴⁵ we previously sought specific comment on how the Commission might further reduce the information collection burden for small business concerns with fewer than 25 employees.²⁴⁶ We describe impacts that might affect small businesses, which includes most businesses with fewer than 25 employees, in the FRFA in Appendix B, *infra*.

D. Congressional Review Act

119. The Commission will send a copy of this *Report and Order* in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act (CRA), *see* 5 U.S.C. § 801(a)(1)(A).

VIII. ORDERING CLAUSES

120. 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 *Report and Order* in PS Docket No. 11-82 IS ADOPTED and that Part 4 of the Commission’s Rules, 47 C.F.R. Part 4 is amended as set forth in Appendix C.

²⁴² The Paperwork Reduction Act of 1995 (PRA), Pub. L. No. 104-13, 109 Stat 163 (1995) (codified in Chapter 35 of title 44 U.S.C.).

²⁴³ We propose to modify existing information collection requirements relating to the Commission’s network outage reporting rules. *See* OMB Control No. 3060-0484.

²⁴⁴ 44 U.S.C. § 3507(d).

²⁴⁵ The Small Business Paperwork Relief Act of 2002 (“SBPRA”), Pub. L. No. 107-198, 116 Stat 729 (2002) (codified in Chapter 35 of title 44 U.S.C.); *see* 44 U.S.C. § 3506(c)(4).

²⁴⁶ *NPRM*, 26 FCC Rcd at 7196 ¶ 80.

121. IT IS FURTHER ORDERED that the rules adopted herein WILL BECOME EFFECTIVE on the date specified in a Commission notice published in the Federal Register announcing their approval under the Paperwork Reduction Act by the Office of Management and Budget.

122. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Report and Order*, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A**List of Commenting Parties****Comments:**

1. Alliance for Telecommunications Industry Solutions (“ATIS”)
2. American Cable Association (“ACA”)
3. AT&T Inc. (“AT&T”)
4. CenturyLink (“CenturyLink”)
5. Comcast Corporation (“Comcast”)
6. CTIA – The Wireless Association (“CTIA”)
7. Level 3 Communications, LLC (“Level 3”)
8. Massachusetts Department of Telecommunications and Cable
9. MegaPath Communications, Inc.
10. MetroPCS Communications, Inc. (“MetroPCS”)
11. Michigan Public Service Commission (“Michigan PSC”)
12. National Association of State Utility Consumer Advocates and New Jersey Division of Rate Counsel (“NASUCA”)
13. National Cable & Telecommunications Association (“NCTA”)
14. New York State Public Service Commission (“NYPSC”)
15. PayPal, Inc.
16. Sprint Nextel Corporation (“Sprint”)
17. T-Mobile USA, Inc. (“T-Mobile”)
18. Telecommunications Industry Association (“TIA”)
19. Time Warner Cable Inc. (“Time Warner”)
20. United States Telecom Association (“USTA”)
21. Verizon and Verizon Wireless (“Verizon”)
22. Voice on the Net Coalition (“VON Coalition”)
23. Vonage Holdings Corporation (“Vonage”)
24. WCS Coalition (“WCS”)
25. Wireless Internet Service Providers Association (“WISPA”)
26. XO Communications (“XO”)

Reply Comments:

1. ATIS
2. ACA
3. AT&T
4. CTIA
5. Financial Services Sector Coordinating Council
6. Fixed Wireless Internet Service Providers (Washington Broadband, Inc.; Shelby Broadband; Vistabeam; BackWoods Wireless; Crescomm Services, Inc.; Communications Specialists Company of Wilmington, LLC; Electronic Solutions, Inc.; NGL Connection; Rock Solid Internet & Telephone; Alluretech; On-Ramp Indiana, Inc.; Rapid DSL, Inc; Central Coast Internet; New Wave Net Corp.; ECSIS.net, LLC; Rural Broadband Networks Services LLC; MohaveBroadBand.com LLC; and Imagine Networks)
7. Laurence Brett Glass d/b/a LARIAT
8. MetroPCS
9. Michigan PSC
10. NASUCA

11. National Association of Telecommunications Officers and Advisors, the National League of Cities, and the National Association of Counties (“NATOA”)
12. National Emergency Number Association (“NENA”)
13. Public Service Commission of the District of Columbia
14. SANS Institute (“SANS”)
15. Sprint
16. TIA
17. T-Mobile
18. United States Internet Service Provider Association (“USISPA”)
19. Utilities Telecom Council (“UTC”)
20. Vonage
21. Wireless Communications Association International, Inc. (“WCAI”)
22. Wireless Internet Service Providers Association
23. XO

Ex parte Submissions:

1. ACA
2. Association of Public-Safety Communications Officials International, Inc. (“APCO”)
3. AT&T
4. Blooston Rural Carriers
5. CenturyLink
6. Clearwire
7. Comcast
8. CompTel -The Competitive Communications Association
9. Critical Infrastructure Communications Coalition (Southern Company Services; Duke Energy; National Rural Electric Cooperative Association; American Petroleum Institute; Utilities Telecom Council)
10. CTIA
11. eBay Inc.
12. Edison Electric Institute
13. Frontier Communication Corporation
14. Gallagher, Colin
15. Independent Telephone and Telecommunications Alliance
16. Intrado Inc.
17. Kepner, Rita Marie
18. Level 3
19. MetroPCS
20. NASUCA
21. National Association of Manufacturers
22. National Rural Electric Cooperative Association
23. NATOA
24. NCTA
25. National Telecommunications Cooperative Association
26. NYPSC
27. Organization for the Promotion and Advancement of Small Telecommunications Companies
28. Public Knowledge/Open Technology Initiative
29. SANS
30. Sprint
31. T-Mobile
32. TechAmerica
33. TIA

34. Time Warner
35. UTC
36. USISPA
37. USTA
38. VON Coalition
39. Vonage
40. Verizon
41. WCAI
42. WCS Coalition
43. Windstream Communications
44. XO

Participants at FCC Workshop: Ensuring Broadband Reliability and Resiliency (Sep. 8, 2011):

1. Mark Adams, Executive Director, Technology Operations, Cox Communications
2. John Carlson, representing the Financial Services Sector Coordinating Council,
3. Laurie Flaherty, Coordinator, National 911 Program, U.S. Department of Transportation, National Highway Traffic Safety Administration, Office of Emergency Medical Services, National 911 Office
4. Masaru Fujino, Counselor, Embassy of Japan in the United States, Ministry of Foreign Affairs
5. Stacy Hartman, Director, Federal Public Policy, CenturyLink
6. Roger Hixson, Technical Issues Director, NENA
7. Uffe Holst Jensen, Councillor, European Commission
8. Robert Kondilas, Cloud Strategist, Computer Sciences Corporation
9. Mike Mayernik, Senior Director of Network Operations, Vonage
10. Anthony Myers, Chairman, Maryland Emergency Number Systems Board, State of Maryland
11. Scott F. Robohn, Director, Technology and Solutions – Americas, Juniper Networks
12. Michael Rowley, Interim Chief, Network Reliability, New York Department of Public Service
13. Duminda Wijesekera, Associate Professor, Department of Computer Science, George Mason University

APPENDIX B

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ an Initial Regulatory Flexibility Analysis (IRFA) was included in the *Notice of Proposed Rulemaking* in PS Docket No. 11-82 (*NPRM*).² The Commission sought written public comment on the proposals in these dockets, including comment on the IRFA. This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.³

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

2. In this *Report and Order*, the Commission extends the Part 4 outage reporting requirements⁴ to interconnected Voice over Internet Protocol (VoIP) service providers. Specifically, it:

- extends the Commission’s mandatory outage reporting rules to facilities-based and non-facilities-based interconnected VoIP service providers, and applies the current Part 4 definition of “outage”⁵ to outages of interconnected VoIP service, covering the complete loss of service and/or connectivity to customers;
- requires that such providers submit electronically a notification to the Commission within 240 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 that potentially affects a 9-1-1 special facility;
- requires any such providers submit an electronic notification within 24 hours of discovering that they have experienced an outage of at least 30 minutes duration that potentially affects at least 900,000 user minutes of interconnected VoIP service and results in complete loss of service; or potentially affects any special offices and facilities;
- clarifies that the Part 4 rules apply to new wireless technologies; and
- mandates that providers submit electronically a Final Communications Outage Report to the Commission not later than thirty days after discovering the outage.

3. The Commission is taking this action because collecting data on significant outages of interconnected VoIP services will help the Commission monitor compliance with the statutory 9-1-1 obligations of interconnected VoIP service providers⁶ as well as help ensure the Nation’s current and

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 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*, 26 FCC Rcd 7166, 7202 (2011) (*NPRM*).

³ See 47 C.F.R. § 604.

⁴ 47 C.F.R. Part 4.

⁵ “Outage” is defined as 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 communication provider’s network. See 47 C.F.R. § 4.5(a).

⁶ Under the New and Emerging Technologies 911 (NET 911) Improvement Act of 2008, Pub. L. No. 110-283, 122 Stat. 2620 (2008) (amending Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, 113 Stat. 1286 (1999)), interconnected VoIP providers are required to provide 9-1-1 services to their subscribers. See also Implementation of the NET911 Improvement Act of 2008, *Report and Order*, 23 FCC Rcd 1154 (2008).

future 9-1-1 systems are as reliable and resilient as possible both on a day-to-day basis and in times of major emergency. Consumers increasingly are relying on Internet Protocol (IP)-based technologies as substitutes for communications services provided by older communications technologies, and increasingly use interconnected VoIP services in lieu of traditional telephone service. As of December 31, 2010, 31 percent of the more than 87 million residential telephone subscriptions in the United States were provided by interconnected VoIP providers⁷—an increase of 21 percent (from 22.4 million to 27.1 million) from the end of 2009;⁸ additionally, the Commission estimates that approximately 31 percent of residential wireline 9-1-1 calls are made using VoIP service.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

4. Three comments specifically addressed the proposed rules raised by the IRFA (*i.e.*, how the rules would impact small entities).⁹ The Commission determined to extend the Part 4 network outage reporting rules to interconnected VoIP providers only at this time, obviating some of the broadband-related concerns raised by these commenters. Nevertheless, we consider the issues raised by the three commenters.

5. ACA notes that each new regulatory mandate imposes costs and each new mandate requiring reporting to the Commission affects small providers disproportionately;¹⁰ significant difficulties will arise if smaller providers are called upon to determine whether some specific, quantifiable level of service is actually being received by their subscribers over their distribution networks for the purpose of outage reporting.¹¹ It urges that, if the Commission does, in fact, adopt rules extending the outage reporting requirement to interconnected VoIP providers, it must do so in a way that “even the smallest rural provider using existing technologies and network capabilities” can easily implement the reporting regime.¹² We agree with ACA, and adopt rules with which small providers can comply using existing technology.

6. The VON Coalition asks that the Commission completely decline to extend outage reporting requirements to VoIP providers. If the Commission decides to extend the rules, then the rules should be modified to require such providers to report only complete outages within the provider’s control. Reporting criteria and timing also must be modified to account for the greater complexity of VoIP and the resources of small VoIP providers to allow additional time for reports and no financial penalties for missing deadlines.¹³ In response, the Commission believes the cost of complying with the new rules will be relatively low, particularly in light of the benefit obtained from getting a complete picture of

⁷ See *Local Telephone Competition: Status as of December 31, 2010*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission (Oct. 2011), Figure 2 - Wireline Retail Local Telephone Service Connections by Technology and Customer Type as of December 31, 2010, http://transition.fcc.gov/Daily_Releases/Daily_Business/2011/db1007/DOC-310264A1.pdf (last visited Oct. 17, 2011).

⁸ See *Local Telephone Competition: Status as of December 31, 2009*, Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission (Jan. 2011), Figure 2 -Wireline Retail Local Telephone Service Connections by Technology and Customer Type as of December 31, 2009, http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-304054A1.pdf (last visited Oct. 17, 2011).

⁹ See American Cable Association (ACA) Comments (filed Aug. 8, 2011); Voice on the Net Coalition (VON Coalition) Comments (filed Aug. 8, 2011); Wireless Internet Service Provider Association (WISPA) Comments (filed Aug. 8, 2011); *see also* ACA Reply Comments (filed Oct. 7, 2011); WISPA Reply Comments (filed Oct. 7, 2011).

¹⁰ ACA Comments at 6.

¹¹ *Id.* at 9.

¹² *Id.* at 12.

¹³ VON Coalition Comments at 12.

interconnected VoIP network reliability. Further, by so significantly scaling back what rules it actually adopts (as opposed to what was proposed), the Commission believes it is being responsive regarding the effect of the rules on small providers. Having all VoIP providers, including small providers, report outages will help advance the Commission's goal of greater network reliability. Further, the Commission believes that, because every interconnected VoIP service provider has a competitive interest in providing reasonable network reliability to satisfy its customers, such a provider already tracks, in some manner, the type of information the Commission seeks, so collecting and reporting would not be an additional undue burden.

7. In urging that any rules adopted not unduly burden affect small providers, WISPA states that these providers do not routinely collect and monitor all of the types of information envisioned in the *NPRM*,¹⁴ and that a "one-size-fits-all"¹⁵ rule regarding quality metrics would disproportionately, and negatively, impact small providers.¹⁶ WISPA would have small providers subject to outage reporting affecting a 9-1-1 facility, but would exempt them from the "30 minutes/900,000 user minutes" rule. WISPA believes this exemption will reduce the service provider's cost burden while also allowing the Commission to improve the resilience and reliability of the Nation's commercial and public safety communications infrastructure.¹⁷ As noted immediately above, the Commission believes that interconnected VoIP service providers have a competitive interest in providing reasonable network reliability to satisfy its customers, and most likely already track, in some manner, the type of information the Commission seeks. We do not see this collecting and reporting, using existing technology, as an additional undue burden.

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

8. 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 rules adopted herein.¹⁸ The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."¹⁹ In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.²⁰ 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).²¹

1. Total Small Entities

9. *Small Businesses, Small Organizations, and Small Governmental Jurisdictions.* Our action may, over time, affect small entities that are not easily categorized at present. We therefore describe here,

¹⁴ WISPA Comments at 3-4.

¹⁵ WISPA Comments at 4.

¹⁶ *Id.* at 4.

¹⁷ *Id.* at 4-6.

¹⁸ 5 U.S.C. § 603(b)(3).

¹⁹ 5 U.S.C. § 601(6).

²⁰ 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."

²¹ Small Business Act, 15 U.S.C. § 632.

at the outset, three comprehensive, statutory small entity size standards.²² First, nationwide, there are a total of approximately 27.5 million small businesses, according to the SBA.²³ 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.”²⁴ Nationwide, as of 2007, there were approximately 1,621,315 small organizations.²⁵ 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.”²⁶ Census Bureau data for 2011 indicate that there were 89,476 local governmental jurisdictions in the United States.²⁷ We estimate that, of this total, as many as 88,506 entities may qualify as “small governmental jurisdictions.”²⁸ Thus, we estimate that most governmental jurisdictions are small.

2. Interconnected VoIP and Broadband ISPs

10. *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,²⁹ which has an SBA small business size standard of 1,500 or fewer employees.³⁰ These are also labeled “broadband.” The latter are within the category of All Other Telecommunications,³¹ which has a size standard of annual receipts of \$25 million or less.³² These are labeled non-broadband.

²² See 5 U.S.C. §§ 601(3)–(6).

²³ See SBA, Office of Advocacy, “Frequently Asked Questions,” web.sba.gov/faqs (last visited May 6, 2011); figures are from 2009).

²⁴ 5 U.S.C. § 601(4).

²⁵ INDEPENDENT SECTOR, THE NEW NONPROFIT ALMANAC & DESK REFERENCE (2010).

²⁶ 5 U.S.C. § 601(5).

²⁷ U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2011, Table 427 (2007)

²⁸ The 2007 U.S. Census data for small governmental organizations indicate that there were 89,476 “Local Governments” in 2007. (U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES 2011, Table 428.) The criterion by which the size of such local governments is determined to be small is a population of 50,000. However, since the Census Bureau does not specifically apply that criterion, it cannot be determined with precision how many of such local governmental organizations is small. Nonetheless, the inference seems reasonable that substantial number of these governmental organizations has a population of less than 50,000. To look at Table 428 in conjunction with a related set of data in Table 429 in the Census’s Statistical Abstract of the U.S., that inference is further supported by the fact that in both Tables, many entities that may well be small are included in the 89,476 local governmental organizations, *e.g.* county, municipal, township and town, school district and special district entities. Measured by a criterion of a population of 50,000 many specific sub-entities in this category seem more likely than larger county-level governmental organizations to have small populations. Accordingly, of the 89,746 small governmental organizations identified in the 2007 Census, the Commission estimates that a substantial majority is small.

²⁹ 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).

³⁰ 13 C.F.R. § 121.201, NAICS code 517110.

³¹ 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).

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

11. 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.³³ For the second category, the data show that 2,383 firms operated for the entire year.³⁴ Of those, only 37 had annual receipts of more than \$25,499,999 per year. Consequently, we estimate that the majority of firms are small entities. To ensure that this IRFA describes the universe of small entities that our action might affect, we discuss different types of entities that might be currently providing interconnected VoIP service.

3. Wireline Providers

12. *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.³⁵

13. 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.”³⁶ 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.³⁷ 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.

14. *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 business is small if it has 1,500 or fewer employees.³⁸ 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,

³³ 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).

³⁴ See U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, “Establishment and Firm Size,” NAICS code 5179191 (released Nov. 19, 2010) (receipts size).

³⁵ 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).

³⁶ 5 U.S.C. § 601(3).

³⁷ 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).

³⁸ 13 C.F.R. § 121.201, NAICS code 517110.

the Commission estimates that the majority of interexchange carriers are small entities that may be affected by our action today.³⁹

15. 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.⁴⁰ 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 have more than 1,500 employees.⁴¹ Consequently, the Commission estimates that the majority of operator service providers are small entities that may be affected by our action today.

4. Wireless Providers – Fixed and Mobile

16. To the extent the wireless services listed below are used by wireless firms for VoIP services, the rules adopted today 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.

17. *Wireless Telecommunications Carriers (except Satellite)*. Since 2007, the Census Bureau has placed wireless firms within this new, broad, economic census category.⁴² Prior to that time, such firms were within the now-superseded categories of “Paging” and “Cellular and Other Wireless Telecommunications.”⁴³ Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.⁴⁴ 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.⁴⁵ 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. 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.⁴⁶ Of these, an estimated 261 have 1,500 or fewer employees and 152 have

³⁹ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=600&-ds_name=EC0751SSSZ5&-_lang=en (last visited May 11, 2011).

⁴⁰ 13 C.F.R. § 121.201, NAICS code 517110.

⁴¹ TRENDS IN TELEPHONE SERVICE, tbl. 5.3.

⁴² 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).

⁴³ 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).

⁴⁴ 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).

⁴⁵ 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).

⁴⁶ See Trends in Telephone Service at Table 5.3.

more than 1,500 employees.⁴⁷ 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.

18. *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.⁴⁸ The SBA has approved these definitions.⁴⁹ 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.

19. *1670–1675 MHz Services*. This service can be used for fixed and mobile uses, except aeronautical mobile.⁵⁰ 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.

20. *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).⁵¹ Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees.⁵² According to *Trends in Telephone Service* data, 413 carriers reported that they were engaged in wireless telephony.⁵³ Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.⁵⁴ Therefore, more than half of these entities can be considered small.

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.⁵⁵ 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.⁵⁶ The SBA has approved these small business size standards for the 900 MHz Service.⁵⁷ 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

⁴⁷ *See id.*

⁴⁸ *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).

⁴⁹ *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*).

⁵⁰ 47 C.F.R. § 2.106; *see generally* 47 C.F.R. §§ 27.1–70.

⁵¹ 13 C.F.R. § 121.201, NAICS code 517210.

⁵² *Id.*

⁵³ TRENDS IN TELEPHONE SERVICE, tbl. 5.3.

⁵⁴ *Id.*

⁵⁵ 47 C.F.R. § 90.814(b)(1).

⁵⁶ *Id.*

⁵⁷ *See* Letter from Aida Alvarez, Administrator, SBA, to Thomas Sugrue, Chief, Wireless Telecommunications Bureau, FCC (filed Aug. 10, 1999) (*Alvarez Letter 1999*).

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.⁵⁸ 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.⁵⁹

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.⁶⁰ 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.⁶¹ 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.⁶² 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.⁶³ 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.⁶⁴ 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.⁶⁵ 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 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.⁶⁶ The SBA approved these small size standards.⁶⁷ 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

⁵⁸ 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).

⁵⁹ See *Multi-Radio Service Auction Closes*, Public Notice, 17 FCC Rcd 1446 (WTB 2002).

⁶⁰ 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).

⁶¹ See *800 MHz SMR Service Lower 80 Channels Auction Closes; Winning Bidders Announced*, Public Notice, 16 FCC Rcd 1736 (2000).

⁶² See generally 13 C.F.R. § 121.201, NAICS code 517210.

⁶³ 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*).

⁶⁴ See *Channels 52–59 Report and Order*, 17 FCC Rcd at 1087-88, ¶ 172.

⁶⁵ See *id.*

⁶⁶ See *id.*, 17 FCC Rcd at 1088, ¶ 173.

⁶⁷ See *Alvarez Letter 1999*.

the winning bidders claimed small business, very small business or entrepreneur status and won a total of 329 licenses.⁶⁸ 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.⁶⁹ 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.⁷⁰ 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*.⁷¹ 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.⁷² 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.⁷³ 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.⁷⁴ 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.⁷⁵ 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.⁷⁶ Additionally, a very small business is 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.⁷⁷ SBA approval of these definitions is not required.⁷⁸ An auction of 52 Major Economic Area licenses commenced on September

⁶⁸ See *Lower 700 MHz Band Auction Closes*, Public Notice, 17 FCC Rcd 17272 (WTB 2002).

⁶⁹ See *Lower 700 MHz Band Auction Closes*, Public Notice, 18 FCC Rcd 11873 (WTB 2003).

⁷⁰ See *id.*

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

⁷² See *Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

⁷³ *700 MHz Second Report and Order*, 22 FCC Rcd 15289.

⁷⁴ See *Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

⁷⁵ 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*).

⁷⁶ See *746–764 MHz Band Second Report and Order*, 15 FCC Rcd at 5343, para. 108.

⁷⁷ See *id.*

⁷⁸ 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).

6, 2000, and closed on September 21, 2000.⁷⁹ 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.⁸⁰

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.⁸¹ 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.⁸² 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.⁸³ These definitions were approved by the SBA.⁸⁴ 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.⁸⁵ In 2006, the Commission conducted its first auction of AWS-1 licenses.⁸⁶ In that initial AWS-1 auction, 31 winning bidders identified themselves as very small businesses.⁸⁷ Twenty-six of the winning bidders identified themselves as small businesses.⁸⁸ In a subsequent 2008 auction, the

⁷⁹ See *700 MHz Guard Bands Auction Closes: Winning Bidders Announced*, Public Notice, 15 FCC Rcd 18026 (WTB 2000).

⁸⁰ See *700 MHz Guard Bands Auction Closes: Winning Bidders Announced*, Public Notice, 16 FCC Rcd 4590 (WTB 2001).

⁸¹ 13 C.F.R. § 121.201, NAICS codes 517210.

⁸² *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).

⁸³ *Id.*

⁸⁴ 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).

⁸⁵ 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).

⁸⁶ 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*").

⁸⁷ 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*").

⁸⁸ See *id.*

Commission offered 35 AWS-1 licenses.⁸⁹ Four winning bidders identified themselves as very small businesses, and three of the winning bidders identified themselves as a small business.⁹⁰ 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.⁹¹

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).⁹² 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,⁹³ private-operational fixed,⁹⁴ and broadcast auxiliary radio services.⁹⁵ They also include the Local Multipoint Distribution Service (LMDS),⁹⁶ the Digital Electronic Message Service (DEMS),⁹⁷ and the 24 GHz Service,⁹⁸ where licensees can choose between common carrier and non-common carrier status.⁹⁹ The 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.¹⁰⁰ For the category

⁸⁹ See *AWS-1 and Broadband PCS Procedures Public Notice*, 23 FCC Rcd at 7499. Auction 78 also included an auction of broadband PCS licenses.

⁹⁰ 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).

⁹¹ 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).

⁹² The service is defined in section 90.1301 *et seq.* of the Commission’s Rules, 47 C.F.R. § 90.1301 *et seq.*

⁹³ See 47 C.F.R. Part 101, Subparts C and I.

⁹⁴ See 47 C.F.R. Part 101, Subparts C and H.

⁹⁵ 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.

⁹⁶ See 47 C.F.R. Part 101, Subpart L.

⁹⁷ See 47 C.F.R. Part 101, Subpart G.

⁹⁸ See *id.*

⁹⁹ See 47 C.F.R. §§ 101.533, 101.1017.

¹⁰⁰ 13 C.F.R. § 121.201, NAICS code 517210.

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.¹⁰¹ 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.¹⁰² In the 1998 and 1999 LMDS auctions,¹⁰³ 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.¹⁰⁴ 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.¹⁰⁵ These definitions of “small business” and “very small business” in the context of the LMDS auctions have been approved by the SBA.¹⁰⁶ 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.

5. Satellite Service Providers

33. *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.¹⁰⁷ The second has a size standard of \$25 million or less in annual receipts.¹⁰⁸

34. 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.”¹⁰⁹ Census Bureau data for 2007 show that 512 Satellite

¹⁰¹ 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).

¹⁰² See Local Multipoint Distribution Service, *Second Report and Order*, 12 FCC Rcd 12545 (1997).

¹⁰³ 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.)

¹⁰⁴ See *LMDS Order*, 12 FCC Rcd at 12545.

¹⁰⁵ *Id.*

¹⁰⁶ See Letter to Daniel Phythyon, Chief, Wireless Telecommunications Bureau (FCC) from A. Alvarez, Administrator, SBA (January 6, 1998).

¹⁰⁷ 13 C.F.R. § 121.201, NAICS code 517410.

¹⁰⁸ 13 C.F.R. § 121.201, NAICS code 517919.

¹⁰⁹ See U.S. Census Bureau, 2007 NAICS Definitions, “517410 Satellite Telecommunications.

Telecommunications firms that operated for that entire year.¹¹⁰ Of this total, 464 firms had annual receipts of under \$10 million, and 18 firms had receipts of \$10 million to \$24,999,999.¹¹¹ Consequently, the Commission estimates that the majority of Satellite Telecommunications firms are small entities that might be affected by our action.

35. 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.”¹¹² For this category, Census Bureau data for 2007 show that there were a total of 2,383 firms that operated for the entire year.¹¹³ Of this total, 2,346 firms had annual receipts of under \$25 million and 37 firms had annual receipts of \$25 million to \$49,999,999.¹¹⁴ 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.

36. *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.”¹¹⁵ The SBA has developed a small business size standard for wireline firms within the broad economic census category, “Wired Telecommunications Carriers.”¹¹⁶ 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 in 2007 as Wired Telecommunications Carriers. 3,144 had 1,000 or fewer employees, while 44 operated with more than 1,000 employees.¹¹⁷

¹¹⁰ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en (last visited May 11, 2011).

¹¹¹ *Id.*

¹¹² See <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517919&search=2007%20NAICS%20Search> (last visited May 11, 2011).

¹¹³ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en (last visited May 11, 2011).

¹¹⁴ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en (last visited May 11, 2011).

¹¹⁵ 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).

¹¹⁶ 13 C.F.R. § 121.201 (NAICS code 517110).

¹¹⁷ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en (last visited May 11, 2011).

37. *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.¹¹⁸ Industry data indicate that all but ten cable operators nationwide are small under this size standard.¹¹⁹ In addition, under the Commission's rules, a "small system" is a cable system serving 15,000 or fewer subscribers.¹²⁰ 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.¹²¹ Thus, under this standard, most cable systems are small.

38. *Cable System Operators.* The Communications Act of 1934, as amended, also contains a size 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."¹²² 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.¹²³ Industry data indicate that, of 1,076 cable operators nationwide, all but ten are small under this size standard.¹²⁴ 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,¹²⁵ 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

39. The rules adopted in this *Report and Order* require interconnected VoIP providers to submit electronically a notification to the Commission within 240 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 that potentially affects a 9-1-1 special facility. The rules also require that such any such providers submit an electronic notification within 24 hours of discovering that they have experienced an outage of at least 30 minutes duration that potentially affects at least 900,000 user minutes of interconnected VoIP service and results in complete loss of service; or potentially affects any special offices and facilities. The rules require that providers submit electronically a Final Communications Outage Report to the Commission not later than thirty days after discovering the outage; and clarify that the Part 4 rules apply to new wireless technologies.

¹¹⁸ 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).

¹¹⁹ See BROADCASTING & CABLE YEARBOOK 2010 at C-2 (2009) (data current as of Dec. 2008).

¹²⁰ 47 C.F.R. § 76.901(c).

¹²¹ 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.

¹²² 47 U.S.C. § 543(m)(2); see 47 C.F.R. § 76.901(f) & nn. 1-3.

¹²³ 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).

¹²⁴ 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).

¹²⁵ 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).

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

40. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its final 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.¹²⁶

41. The Commission considered two significant alternatives to the rules as adopted, for the benefit (*i.e.*, less compliance cost) of small business: (1) a small business exception, under which small business would ultimately need to comply with the rules, but on a more relaxed basis, with significantly more time to contact the Commission regarding an outage, and (2) a small business exemption, under which small businesses would be exempt completely from the rules, except with respect to outages of 30 minutes or more to Public Safety Answering Points (PSAPs) or special facilities. In considering these alternatives, the Commission was concerned about the compliance burden on small interconnected VoIP providers.

42. The Commission ultimately rejected these alternatives, and decided to make the rule generally applicable. The Commission's reasons were many. The rules proposed in the *NPRM*, in particular those related to broadband monitoring and quality of service metrics, may have created considerable administrative and logistic burden for all providers, and for small providers in particular. Instead of requiring a wide variety of outage information from broadband access, broadband backbone, and interconnected VoIP providers, the Commission is requiring limited information from interconnected VoIP providers only, which dramatically decreases compliance costs. Further, as noted throughout the *Report and Order*, the Commission believes all parties covered by these rules, including small businesses, already collect the information the Commission seeks, if only because it is in their own interest to know the circumstances of a significant network outage. In the Commission's view, establishing a generally-applicable reporting rule will promote both safety and network reliability; people and business that are customers of smaller VoIP providers are entitled to no less.

43. *Expected data collection costs.* The Commission believes that, because every interconnected VoIP service provider has a competitive interest in providing reasonable network reliability to satisfy their customers, such providers already track the type of information the Commission seeks this sort of information in some manner, and thus would not be an additional undue administrative burden. We note also that the configuration of VoIP service should already make this information available for all providers. End-user VoIP terminals are IP-enabled devices that run Simple Network Management Protocol (SNMP) with the associated Management Information Base (MIB). Thus, the Network Management System (NMS) of interconnected VoIP providers is able to auto-poll or execute a manual poll of a portion or all of its VoIP-enabled devices to determine connectivity.¹²⁷ The inability of a VoIP-enabled device to connect with its call management system (SIP proxy, Call Manager, *etc.*) prevents the end-user VoIP-enabled device from making a call, whether or not the end-user device has IP connectivity. This call management system is similar to SS7, where a similar failure would also prevent voice service. These types of failures, if large enough, would most certainly generate a "trouble ticket" or, for smaller incidents, register on similar systems that track outages and customer technical issues. Therefore, we

¹²⁶ 5 U.S.C. § 603(c).

¹²⁷ At the *FCC Workshop*, Mark Adams commented: "So, at a basic level, we obviously do device level monitoring, and based on the types of devices, we know generally -- not always, but generally -- is it completely service affecting, or is it going to result in some kind of degradation. So we do device level monitoring. We monitor our end points for on or off status right through the switches, and through our cable modems." Mark Adams, Executive Director, Technology Operations, Cox Communications, *FCC Workshop*, Transcript at 106.

conclude that interconnected VoIP service providers have a relatively low-cost ability to monitor VoIP-enabled end-user devices for connectivity. Additionally, we note that no commenter indicated it would need to purchase and install any additional equipment into its network to detect when a large number of VoIP customers are out of service.

44. *Expected data reporting costs.* Because service providers already have technical and competitive reasons to collect outage information in the normal course of business, the costs of compliance with a reporting requirement are essentially those of identifying those outages that meet the reporting threshold and reformatting and uploading that information into Network Outage Reporting System (NORS). The vast majority of interconnected VoIP customers are served by providers that already have years of experience filing outage reports in NORS with respect to other services. Starting with information in the record from parties with experience filing in NORS and extrapolating that to the total cost that industry will bear to start reporting significant interconnected VoIP outages in NORS, we estimate that *industry-wide* the total operating cost for reporting on interconnected VoIP outages and administering outage reporting programs likely is less than \$1 million in the first year¹²⁸ and less than \$500,000 per year thereafter for *all* the providers who will report.¹²⁹

45. Finally, the Commission's experience suggests that few, if any, small interconnected VoIP providers will ever reach the threshold of experiencing an outage (as defined by the Part 4 rules, and as requiring notification to the Commission). Based on NORS reporting, only a handful of small entities ever have endured an outage that reaches the minimum "30 minutes/900,000 user minutes" threshold. Should such an outage befall a small provider, the benefit of providing various information on that outage would clearly outweigh whatever negligible burden might exist. While the burden of reporting may be small, the benefit of such reporting are nation-wide, by allowing the Commission to better understand the causes of network outages, and the steps that can be taken to prevent them.

¹²⁸ Commission staff estimate first-year costs to include one-time training costs of \$416,000 to train approximately 300 new reporting entities (*i.e.*, 5 employees * 100 large service providers * 4 hours * \$80/hour = \$160,000 and 2 employees * 200 small service providers * 8 hours * \$80/hrs = \$256,000 for a total of \$416,000 in first-year training costs) in addition to the annual cost to report outages and administer the outage reporting program. According to data received on Form 477, there are 466 companies providing interconnected VoIP service. Of those companies, staff estimates that at least one-third are already under obligation to report outages of legacy services under the existing Part 4 rules, and that therefore, approximately 300 providers of interconnected VoIP service will now be obligated to report outages that meet the thresholds of the new rule. Based on years of experience coordinating with reporting entities, Commission staff estimates that the largest companies train an average of five staff on outage reporting, and that smaller companies train up to two. In terms of the amount of training necessary, staff estimates that four hours of training will be required for staff in those companies that are already reporting outages of legacy services, and twice that amount will be required for companies that are new to outage reporting. Labor costs were assumed to be \$80 per hour. As discussed below, the anticipated reporting costs are \$450,000. Therefore, the anticipated first-year costs are \$416,000 plus \$450,000, or approximately \$866,000.

¹²⁹ Commission staff estimates the annual outage reporting costs to be \$450,000 (*i.e.*, \$300 per report * 1,500 additional reports). Underlying this calculation is the comment of ATIS that one carrier has indicated its average labor costs associated solely with the preparation of outage reports is approximately \$300 per report. *See* ATIS Comments at 7, n.9. With respect to the number of expected additional reports, staff extrapolated from several years of outage reporting data regarding wireline service outages (which are functionally equivalent to outages of interconnected VoIP services) and estimates that up to 1,500 additional outage reports per year might be filed for the entire interconnected VoIP industry. Thus, 1,500 reports * \$300/report equals \$450,000 annual cost for outage reporting.

APPENDIX C**Final Rules**

For the reasons discussed in the preamble, the Federal Communications Commission amends 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 (f) and adding paragraphs (h), resulting in original paragraph (h) now numbered as paragraph (i), to read as follows:

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

* * * * *

(f) *Wireless service providers* include Commercial Mobile Radio Service communications providers that use cellular architecture and CMRS paging providers. *See* § 20.9 of this chapter for the definition of Commercial Mobile Radio Service. Also included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

* * * * *

(h) *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. Also included are affiliated and non-affiliated entities that maintain or provide communications networks or services used by the provider in offering such communications.

(i) *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 4.7 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.

* * * * *

3. Section 4.9 is amended by adding paragraphs (g) 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:

- (1) within 240 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 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; or
- (2) within 24 hours 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:
 - (a) That potentially affects at least 900,000 user minutes of interconnected VoIP service and results in complete loss of service; or
 - (b) That potentially affects any special offices and facilities (in accordance with paragraphs (a)-(d) of § 4.5).

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 Final reports shall comply with all of the requirements of § 4.11.

**STATEMENT OF
CHAIRMAN JULIUS GENACHOWSKI**

Re: *Proposed Extension of Part Four 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 today's action, the FCC is helping ensure that our communications infrastructure is more resilient. We are helping ensure that consumers will have access to reliable phone service, particularly when calling 9-1-1, whether they are using a traditional telephone or one that operates by interconnected VoIP service.

Public safety is a core mission for the agency. As part of that charge, the FCC has a statutory obligation to ensure the public can make emergency calls, particularly when facing life-threatening situations.

We are working to improve 9-1-1 service and reliability on several fronts. Last year, we laid out a five-point action plan on the transition to Next Generation 9-1-1, which we continue to work on. The plan calls for (1) development of location accuracy mechanisms for NG9-1-1, (2) enabling consumers to send text, photos, and videos to 9-1-1 call centers, (3) facilitating the completion and implementation of NG911 technical standards, (4) developing an NG9-1-1 governance framework, and (5) developing an NG911 funding model. The Plan will increase public access to 9-1-1, provide enhanced information to first responders, and increase the reliability of 9-1-1 networks. As part of that plan, we have launched a proceeding to accelerate the development and deployment of Next Generation 9-1-1, and we have tasked our Communications Security, Reliability, and Interoperability Council advisory committee to make recommendations on incorporating new technologies into the 9-1-1 system.

The action we take today is part of this broader effort. Since its creation in 2005, the FCC's current network outage reporting system – or NORS – has resulted in demonstrably higher reliability for our 9-1-1 system.

The outage data the FCC receives is analyzed and helps us spot trends and patterns that can affect all carriers and networks. The FCC works with the carriers based on actual data to improve day-to-day reliability, resulting in a more resilient communications infrastructure during emergencies.

But the existing Part 4 Outage Reporting rules apply only to legacy communications systems, not to outages occurring over interconnected VoIP services. As a result, during emergencies like Hurricane Irene this past summer, the Commission has not had the information it needs to analyze major outages of interconnected VoIP service.

This is a glaring gap that I'm pleased we are closing today. Approximately 31% of U.S. wireline consumers currently use VoIP as their residential phone service, and the number of VoIP users is only growing. If you need to call 9-1-1, it shouldn't matter who provides your telephone service.

Since public safety is a core mission of the FCC, we will continue to be vigilant to ensure reliability as communications technologies develop. For example, we intend to work with Internet Service Providers on mechanisms for voluntary reporting of broadband outages.

I want to take this opportunity to thank the public safety officials, carriers, cable systems and communications providers who worked with us on this important step to promote communications network reliability and ensure that the 9-1-1 system is secure and robust. I recognize that this requires a commitment on your part, and I appreciate your partnership in this effort.

I also want to thank the staff of our Public Safety and Homeland Security Bureau for their superb work on this item.

**STATEMENT OF
COMMISSIONER ROBERT M. McDOWELL**

Re: *Proposed Extension of Part Four 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, the FCC acts to collect important data regarding service outages experienced by interconnected Voice over Internet Protocol (VoIP) providers and, more importantly, their customers. My colleagues and I agree on the vital importance of voice calls, especially those to 9-1-1. All Americans rightly expect their emergency calls to go through even though most may not be aware of 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 regarding network outage reporting in response to last year's notice of proposed rulemaking.

Given its narrow scope, I am voting to approve today's order. Although our notice of proposed rulemaking discussed an array of regulatory mandates, today we adopt reporting requirements *only* in instances of a complete loss of interconnected VoIP service. There is a longstanding recognition that ensuring clear and effective communications in times of emergency is a key aspect of the Commission's mission. Collecting data on significant outages from VoIP providers will help the Commission in its duty to ensure the reliability and resiliency of our nation's 9-1-1 voice systems, consistent with Congress's mandate set forth in Section 615a-1 of the Communications Act. Moreover, in the reporting context, we put VoIP providers on par with wireline and wireless voice service providers, who already submit this information to the Commission and have for some time.

It is important to emphasize that we are *not* imposing these rules on broadband service providers, whether wireline or wireless. As I have stated many times before, the Commission does not have the legal authority to regulate broadband in such a way. I thank the Chairman for his willingness to accept edits to provide greater clarity regarding the narrow scope of the rules we adopt today, as well as to curtail the possibility of broadening their applicability. I have every confidence that industry will continue to work with the Commission on network outage matters for the benefit of protecting the safety and security of the American people.

As always, I thank the folks in the Public Safety and Homeland Security Bureau for your diligence and thoughtful work.

**STATEMENT OF
COMMISSIONER MIGNON L. CLYBURN**

Re: *Proposed Extension of Part Four 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 today's Order, the Commission takes an important step to improve the reliability of an advanced communications network that has, over the past few years, become increasingly popular. In 2008, Congress believed that Voice over Internet Protocol service was becoming such an integral part of the nation's communications infrastructure that it passed the NET-9-1-1 Act. This federal law states that "it shall be the duty of each IP-enabled voice service provider to provide 9-1-1 service and enhanced 9-1-1 service to its subscribers." The NET-9-1-1 Act also required VoIP service providers to comply with any rule changes the FCC might adopt for this 9-1-1 service.

Developments, since the enactment of this statute, underscore how important it is that Americans have the ability to make 9-1-1 calls through interconnected VoIP networks. As of December 2010, almost 32 million American households and businesses have interconnected VoIP subscriptions. That number represents an increase of 46 percent between December 2008 and December 2010. However, over the past two years, there have been a number of news reports of lengthy VoIP outages. In one case, a carrier experienced an outage where more than one million customers lost interconnected VoIP service for over four hours.

The President has assigned the FCC the mission essential function of ensuring continuous operation of critical communications services. So when the FCC hears news reports about VoIP service outages, it is incumbent upon the Commission to do everything in its power, to prevent such outages in the future.

As the item explains, the Commission has been able to improve the emergency readiness of traditional services such as: voice and paging services over wire line, wireless, cable, and satellite networks. And, it has been able to make these improvements through a light regulatory touch. By that, I mean, the Commission uses outage reporting requirements to facilitate the development and use of voluntary best practices, instead of relying on measures such as mandating specific levels of performance. What we are doing, today, is applying the same regulatory light touch to improving the reliability of interconnected VoIP services.

I also agree with the item's decision not to impose reporting requirements for outages of broadband Internet service. Although the NPRM proposed such requirements, the record in response revealed technical issues that the staff must study before imposing reporting requirements on this service. I am encouraged, however, that the record also reveals a willingness of the industry to participate in a voluntary process to help the Commission study these technical issues.

As I have said, before, collaboration by all stake holders is the best approach to address difficult issues. We have seen this approach work well in other public safety contexts such as E-9-1-1 location accuracy requirements for wireless service providers. Today is another example of this successful approach. I thank the various stakeholders who have worked with the staff of the Public Safety and Homeland Security Bureau to arrive at the rules we adopt today. The collaboration and input from VoIP service providers, state and local governments, and others, such as my former colleagues at NARUC, enabled the Commission to arrive at important reporting requirements that are not burdensome.

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