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

C-2018-3006579

In the Matter of	)	
	)	
Technology Transitions	)	GN Docket No. 13-5
	)	
Policies and Rules Governing Retirement Of Copper Loops by Incumbent Local Exchange Carriers	)	RM-11358
	)	
Special Access for Price Cap Local Exchange Carriers	)	WC Docket No. 05-25
	)	
AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services	)	RM-10593

REPORT AND ORDER, ORDER ON RECONSIDERATION, AND FURTHER NOTICE OF PROPOSED RULEMAKING

Adopted: August 6, 2015 **Released: August 7, 2015**

Comment Date: (30 days after date of publication in the Federal Register)
Reply Comment Date: (60 days after date of publication in the Federal Register)

By the Commission: Chairman Wheeler and Commissioners Clyburn and Rosenworcel issuing separate statements; Commissioners Pai and O'Rielly dissenting and issuing separate statements.

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I. INTRODUCTION

1. Communications networks are rapidly transitioning away from the historic provision of time-division multiplexed (TDM) services running on copper to new, all-Internet Protocol (IP) multimedia networks using copper, co-axial cable, wireless, and fiber as physical infrastructure. Our actions today further the technology transitions underway in our Nation's fixed communications networks that offer the prospect of innovative and improved services to consumers and businesses alike.[1] The core goals of the January 2014 *Technology Transitions Order* frame our approach here.[2] In the *Technology Transitions Order*, we emphasized the importance of speeding market-driven technological transitions and innovations while preserving the core statutory values as codified by Congress: competition, consumer protection, universal service, and public safety.[3] Furthering these core values will accelerate customer adoption of technology transitions. Today, we take the next step in advancing longstanding competition and consumer protection policies on a technologically-neutral basis in order to ensure that the deployment of innovative and improved communications services can continue without delay.[4]

2. Industry is investing aggressively in modern telecommunications networks and services. Overall, according to data supplied by USTelecom and AT&T, capital expenditures by broadband providers topped $75 billion in 2013 and continue to increase.[5] AT&T recently announced that by the year 2020, 75 percent of its network will be controlled by software.[6] To do this, AT&T is undergoing a

[1] *Technology Transitions et al.*, GN Docket No. 13-5 et al., Notice of Proposed Rulemaking and Declaratory Ruling, 29 FCC Rcd 14968, 14969, para. 1 (2014) (*Notice*).

[2] *See Technology Transitions et al.*, GN Docket No. 13-5 et al., Order, Report and Order and Further Notice of Proposed Rulemaking, Report and Order, Order and Further Notice of Proposed Rulemaking, Proposal for Ongoing Data Initiative, 29 FCC Rcd 1433, 1435, para. 1 (2014) (*Technology Transitions Order*).

[3] *See id.*

[4] *See Notice*, 29 FCC Rcd at 14969, paras. 1-2.

[5] AT&T Comments at 25-26; *see also* USTelecom Reply at 4. Unless otherwise noted, all citations to comments in this item refer to comments filed in GN Docket No. 13-5, PS Docket No. 14-174, RM-11358, WC Docket No. 05-25, and RM-10593 (GN Docket No. 13-5 et al.). "Comments" or "Reply" are used to denote comments filed in response to the *Notice*, with reference to the date filed only when that date differs from February 5, 2015 for Comments and March 9, 2015 for Reply Comments, and then only in the first citation to such Comment or Reply, and commenters are referred to according to the list set forth *infra* in Appendix C.

[6] Rachael King, AT&T's Shift to DevOps and New Tech Requires a Massive Training Effort, Wall St. J. (June 5, 2015), http://blogs.wsj.com/cio/2015/06/05/atts-shift-to-devops-and-new-tech-requires-a-massive-training-effort/.

massive effort to train about 130,000 of its employees on software-defined networking architecture and protocols.[7] AT&T has also expanded its wireline IP broadband network to 57 million customer locations, as well as extended fiber to 725,000 business locations.[8] Moreover, Verizon passes more than 19.8 million premises with its all-fiber network — the largest such network in the country — and it projects that soon about 70 percent of the premises in its landline territory will have access to all-fiber facilities.[9] Verizon too has announced an SDN-based strategy "to introduce new operational efficiencies and allow for the enablement of rapid and flexible service delivery to Verizon's customers."[10] And CenturyLink has announced the launch of 1 Gbps broadband service to 16 cities.[11] According to recent reports, CenturyLink's national fiber network upgrade has expanded availability of CenturyLink's gigabit broadband services to nearly 490,000 business locations.[12] These are just a few of many examples in which industry is investing heavily to bring the benefits of new networks and services to customers of all sizes.

3. We recognize that the success of the technology transitions is dependent, among other things, on clear and certain direction from the Commission that preserves the historic values that Congress has incorporated in the Communications Act of 1934, as amended (the Act).[13] In the November 2014 *Notice*, we sought comment on limited oversight that would encourage transitions that could otherwise be delayed if a portion of consumers were left behind or competition were allowed to diminish — recognizing that the transitions that are underway are organic processes without a single starting or stopping point. Building on that *Notice*, in this item we support the transitions by adopting limited and targeted regulation to preserve competition and to protect consumers, especially those in vulnerable populations who have not yet voluntarily migrated from plain old telephone service (POTS) and other legacy services. In taking these steps, we seek to avoid the need for future regulation and dispute resolution that could cause delays down the road.[14] Carriers involved in the historic transitions have made

[7] *Id.*

[8] AT&T Comments at 26.

[9] Verizon Comments at 9; *see also* Sean Buckley, Verizon Sees Value in Transforming Network to IP, Fiber, But Conversion Challenges Remain, FierceTelecom (May 19, 2015), http://www.fiercetelecom.com/story/verizon-sees-value-transforming-network-ip-fiber-conversion-challenges-rema/2015-05-19 ("Internally, the copper-to-fiber migration will produce a number of savings for Verizon, including real estate, power, maintenance and network dispatching. Unlike copper, fiber is also less prone to damage from water or other environmental issues, meaning it can reduce truck rolls to solve customer issues.").

[10] Press Release, Verizon, Verizon Announces Software Defined Networking Strategy, SDN Initiative Means Rapid Time-to-Market Agile Network and Operational Efficiencies (Apr. 28, 2015), http://www.prnewswire.com/news-releases/verizon-announces-software-defined-networking-strategy-300073315.html.

[11] CenturyLink Comments at 29.

[12] Tim Gallen, Speeding Up: CenturyLink Expands Gigabit Internet Service Across Arizona, Phoenix Bus. J. (May 18, 2015), http://www.bizjournals.com/phoenix/blog/techflash/2015/05/speeding-up-centurylink-expands-gigabit-internet.html.

[13] *See Notice*, 29 FCC Rcd at 14969, para. 1; *Technology Transitions Order*, 29 FCC Rcd at 1435-36, paras. 2-4; Letter from Michael R. Romano, Senior Vice President-Policy, NTCA-The Rural Broadband Association, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5 et al., at 1 (filed Nov. 20, 2013) (stating that the Commission "has an essential, statutorily-defined role to play in defining regulatory frameworks to govern essential communications services regardless of underlying technology" and "regulatory certainty and sound public policy require the thoughtful evaluation of any potential changes to determine how core statutory objectives can be fulfilled and better served in the face of shifting consumer preferences, technological developments, and dynamic market forces").

[14] *See* USTelecom Comments at 10-11 (amended Feb. 25, 2015) (requesting clarity on proposed customer notice requirements and other requirements); Verizon Reply Comments at 2 (stating that the Commission's "main focus should be to provide the industry with reasonable certainty that providers will be able to retire older facilities when

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clear their intention to protect consumers and preserve a competitive marketplace going forward, and the pro-transition rules we adopt today are consistent with those mutually shared goals.[15]

4. Building on our proposals in the *Notice*, we adopt clear "rules of the road" to ensure that all consumers will enjoy the benefits of two distinct but related kinds of technology transitions: (1) changes in network *facilities*, and in particular, retirement of copper facilities; and (2) changes that involve the discontinuance, impairment, or reduction of legacy *services*, irrespective of the network facility used to deliver those services. We summarize each of the actions that we take today below.

5. *Informing and Protecting Consumers as Networks and Services Change.* We take the following actions to ensure that consumers are able to make informed choices and that new retail services meet consumers' fundamental needs:

- *Copper Retirement*: We believe that the best balance is struck when consumers are informed, technological progress is fully incented, and current networks are maintained while they are in use. To that end, we reaffirm our decision not to create an approval requirement for retirement of legacy facilities so long as the change of technology does not discontinue, reduce, or impair the services provided — ensuring that incumbent local exchange carriers (LECs) can continue to transition to an all-fiber environment. However, because our current network change rules do not take account of the needs of consumers for accurate information about the consequences of retirements of copper facilities, we provide simply that incumbent carriers (i.e., incumbent LECs) must provide notice of planned copper retirements to retail customers when such retirements remove copper to the customers' premises, along with particular consumer protection measures. We define "copper retirement" so that incumbent LECs know when these responsibilities are triggered. The definition that we adopt will prevent copper facilities from being "*de facto* retired" without adequate notice to affected persons.
- *Service Discontinuance*: Congress has mandated, per section 214 of the Act, that carriers must obtain our approval before they discontinue, reduce, or impair service to a community or part of a community.[16] This discontinuance process allows the Commission to satisfy its obligation under the Act to protect the public interest and to minimize harm to consumers.[17] In the Order on Reconsideration, we deny USTelecom's Petition for Reconsideration of the declaratory ruling we adopted in November 2014, which concluded that the term "service" in section 214(a) is defined functionally and not solely with reference to a carrier's tariffs.[18] By

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they invest in newer, more advanced broadband networks"); TIA Comments at 7 ("Lack of clarity about whether a new investment might also be ruled a service discontinuance requiring Commission approval operates as a disincentive to investing in fiber or other new technologies."); NTCA Reply at 11 (noting its consistent stance that "'clear rules of the road' are an important component of promoting the IP transition" and that "[c]lear rules provide carriers with certainty and therefore the incentive to invest, while ensuring that consumer needs are satisfied as networks continue to evolve").

[15] *See, e.g.*, AT&T Comments at 6-7; Verizon Comments at 2-3; CenturyLink Comments at 3-6; *see also* Comments and Reply of NTCA-The Rural Broadband Association to Oppositions to Petition for Reconsideration of the United States Telecom Association, GN Docket No. 13-5 et al., at 4 (filed Jan. 30, 2015) (asserting that "core principles of consumer protection, competition, and universal service must be sustained in any technology transition" and "sensible, well-defined 'rules of the road' – rather than complete disregard of regulatory frameworks – are more essential than ever to achieve these objectives and at the same time encourage reasonable technology transitions").

[16] *See* 47 U.S.C. § 214(a).

[17] For convenience, in certain circumstances this item uses "discontinue" (or "discontinuance," etc.) as a shorthand that encompasses the statutory terms "discontinue, reduce, or impair," unless the context indicates otherwise. *See id.*

[18] Petition for Reconsideration of the United States Telecom Association, GN Docket No. 13-5 et al. (filed Dec. 23, 2014) (USTelecom Petition or Petition), http://apps.fcc.gov/ecfs/document/view?id=60001010989.

promptly acting on USTelecom's petition, we seek to avoid uncertainty concerning the Commission's position with respect to the scope of this important definitional question under section 214(a) of the Act.

6. *Safeguarding the Public Interest by Preserving the Benefits of Competition.* Incumbent carriers compete with competitive carriers (i.e., competitive LECs) to provide communications services to businesses,[19] schools,[20] healthcare facilities,[21] government entities,[22] and other organizations of all shapes

[19] *See* Letter from Laura VanTil, The Kessler Collection, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1-2 (filed June 17, 2015) (requesting the Commission to "protect vibrant competitive choice during technology transitions" for her portfolio of boutique hotels and residential properties); Letter from Deirdre Pook Magarelli, V. P., Pook & Pook, Inc. Auctioneers & Appraisers, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1-2 (filed June 16, 2015) (encouraging the Commission to "support policies that encourage investment and competition in broadband networks" for her auction firm); Letter from Debra Peterson, Owner, Bliss Yarns, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 19, 2015) (supporting broadband competition for her full service yarn shop); Letter from Oron Strauss, Chairman, Pantheon, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 19, 2015) (asking the Commission to promote competition and access for his technology company providing solutions for nonprofits, associations, and government organizations); Letter from Thomas Smith, Owner and CEO, Lakeland Finishing, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1- 2 (filed June 17, 2015) (arguing that "[f]aster speeds and access to broadband competition will lower costs and increase innovation for manufacturing facilities" like Lakeland Finishing that provides painting and finishing solutions to the automotive industry); Letter from Jim Bodick, IT Dir., Minnesota Made, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 19, 2015) ("With IP based communications becoming more the norm, having choice becomes even more important."); Letter from Charles MacDonald, IT Director, Everglades Farm Equipment, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 23, 2015) (asking for the Commission to uphold competition during the transition period for broadband networks); Garrett Bush, Owner, Arrow Heating & Sheet Metal, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 2 (filed June 19, 2015) (noting that protecting competition "will help ensure that businesses like ours have the power to choose the broadband provider that is the best fit for our needs and growth"); Letter from Bryan Barger, Head of IT Operations, 1st Trust Bank, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed July 29, 2015) ("[W]e commend the FCC's efforts to provide customers with a variety of choices for broadband service and urge you to protect the wholesale access market.").

[20] *See, e.g.*, Letter from Rich Belloni, Dir. of Support Servs., Lincoln County, Oregon School Dist., to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 19, 2015) ("As technology transitions and more services move to IP based solutions, we encourage you to protect the wholesale access market."); Letter from Gene Martin, Nestucca Valley, Oregon, School Dist., to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 20, 2015) (same); Letter from S. Todd Williver, 4-H Program Coordinator, Oregon Univ., to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 22, 2015) (same); Letter from Mary Jane Johnson, Owner, Tomorrow's World Early Learning Ctr., to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 2 (filed June 15, 2015) ("The availability of low cost, affordable broadband options make it easier for school administrators and day care owners to invest in teachers and caregivers."); Letter from David Spann, Chief Information Officer, McKinney Independent School District, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed July 29, 2015) ("It is critical that we provide a highly reliable service to our students and teachers. Since we rely on tax dollars to fund our services we need the most competitive pricing available.").

[21] *See, e.g.*, Letter from Gary Neat, Sys. Dir. of Info. Sys., Ephraim McDowell Med. Ctr., to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed July 29, 2015) ("Our carrier of choice has been able to provide us with more desirable packages and a higher level of service [thereby] allow[ing] us to invest additional money back into vital programs . . . ."); Letter from Linda Snyder, Supervisor of Admin. Servs., Greene County, Illinois, Health Dep't, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 16, 2015) (noting that protecting competition "will help ensure that lifesaving organizations . . . have the power to choose the broadband provider that is the best fit . . . ."); Letter from Tony Downs, IT Dir., Cumberland Family Med. Ctr., to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed July 29, 2015) (noting that he competitive carrier they use to provide the broadband and voice services on which they rely "provide[s] us with individualized services and high-quality customer support . . . [and] has also enabled us to cut overhead costs.").

and sizes. The competitive carriers often rely on a combination of their own facilities and the purchase of last-mile facilities and services from the incumbent carriers, such as unbundled network elements and special access services to provide business services.[23] The organizations these carriers serve benefit from this competition in their purchase of communications services, which helps them serve their customers better and more efficiently.[24] Through today's action, we are adopting policies to ensure competition thrives as our networks continue to transition. Specifically, we implement revisions to our copper retirement rules and our service discontinuance rules to ensure that: (i) competitive carriers are adequately informed about technology changes that impact them; (ii) the interests of end users impacted by upstream changes in service by providers of wholesale inputs are adequately recognized as important to our service discontinuance process; and (iii) competitive carriers do not lose the access that they need to continue to provide the benefits of competition.

- We update the process by which incumbent LECs notify interconnecting entities of planned copper retirements. Among other things, we require incumbent LECs to provide at least six months' advance notice of proposed copper retirements to interconnecting carriers in order to provide such carriers adequate time to prepare their networks for the changes.
- To fulfill our statutory obligation to ensure that changes to telecommunications services that negatively affect the public occur with proper oversight, we clarify that a carrier must obtain Commission approval before discontinuing, reducing, or impairing a service used as a wholesale input, but only when the carrier's actions will discontinue, reduce, or impair service to end users, including a carrier-customer's retail end users. We emphasize that carriers must consider the impact of their actions on end user customers, including the end users of carrier-customers.
- The Commission has long intended to conduct a comprehensive evaluation of dedicated high-capacity connections used daily and intensively by businesses and institutions to transmit their voice and data traffic, known traditionally as "special access." That evaluation will enable us to address critical long-term questions about the state of competition for business data connections and the role of regulation in facilitating competitive markets.[25] Today, we adopt an interim rule to preserve competitive access while the special access proceeding remains pending and to maintain incentives for all parties to rapidly transition to IP. We conclude that to receive authority to discontinue, reduce, or impair a legacy TDM-based service that is used as a wholesale input by competitive providers, an incumbent LEC must as a condition to obtaining discontinuance authority commit to providing competitive carriers

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[22] *See, e.g.*, Letter from Robert Kewan, Info. Tech. Dir., City of Pewaukee, Wisconsin, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 19, 2015) (noting the importance of choice); *see also* Letter from John Waffenschmidt, Information Technology Director, Lincoln County, Oregon, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 19, 2015) (noting that protecting competition "will help ensure that government entities like ours have the power to choose the broadband provider that is the best fit for our needs and growth."); Letter from Kevin J. Snyder, Borough Council Pres., Borough of Kutztown, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed July 29, 2015) ("Our community relies on access to affordable options that the wholesale marketplace provides in order to keep prices [of utility services] lower for taxpayers.").

[23] *See Notice*, 29 FCC Rcd at 14972, para. 6.

[24] *See* Windstream Comments at 6 (providing a chart based on data compiled by an independent market research firm estimating that competitive LECs accounted for 26% of non-residential customer expenditures on wireline communications during the second quarter of 2014, compared to only 16% for all non-LECs, such as cable companies and wireless providers). Within the subset of non-residential multi-location expenditures by companies with at least 250 employees, GeoResults estimated that in the third quarter of 2014 competitive LECs accounted for 32% of expenditures and non-LECs accounted for only 5% of expenditures. *See id.* at 10.

[25] *See Notice*, 29 FCC Rcd at 14973, para. 6.

wholesale access on reasonably comparable rates, terms, and conditions — but only until the Commission: (1) identifies a set of rules and/or policies that will ensure rates, terms, and conditions for special access services are just and reasonable; (2) provides notice such rules are effective in the Federal Register; and (3) such rules and/or policies become effective.[26] We will evaluate compliance with this "reasonably comparable wholesale access" requirement based on the totality of the circumstances and articulate questions that will guide our inquiry. The interim reasonably comparable wholesale access condition applies to two categories of service: (1) special access services at DS1 speed and above; and (2) commercial wholesale platform services such as AT&T's Local Service Complete and Verizon's Wholesale Advantage.[27] This interim reasonably comparable wholesale access requirement preserves a clear path to transition to IP and the benefits of competition, and it provides the Commission with flexibility to adopt long-term rules best suited for the future as a result of its review of the special access data.

7. *Establishing Clear Standards to Streamline Transitions to an All-IP Environment.* Having established that section 214's discontinuance provisions apply to a service based on a totality-of-the-circumstances functional evaluation, we believe it is prudent to provide additional guidance so that consumers and providers are clear on the meaning of the section 214 standard. Building on the record developed in response to the *Notice*, in the Further Notice of Proposed Rulemaking we propose specific criteria for the Commission to use in evaluating applications to discontinue retail services pursuant to section 214 of the Act. We believe all stakeholders will benefit from an additional round of focused comment on our specific proposals. As we stated previously, adopting specific criteria will enable the Commission to ensure that we can carry out our statutorily-mandated responsibilities in a technology-neutral manner and provide clear up-front guidance that will minimize complications when carriers seek approval for large-scale discontinuances. With clear standards in place, carriers will not have to guess as to how they can obtain approval to discontinue TDM services once they are ready to do so.

II. REPORT AND ORDER

A. Background

8. The Commission initiated this rulemaking in November 2014 to help guide and accelerate the technological revolutions that are underway involving the transitions from networks based on TDM circuit-switched voice services running on copper loops to all-IP multi-media networks using copper, co-axial cable, wireless, and fiber as physical infrastructure. This rulemaking is only one of a series of Commission actions to protect core values and ensure the success of these technology transitions.[28] However, we recognize that for them to succeed, we need to ensure competition continues

[26] *See infra* para. 132 (describing the time period of the interim rule in greater detail).

[27] *See infra* Section II.B.2.b.

[28] *See Technology Transitions Order*, 29 FCC Rcd at 1435, para. 1 (kickstarting the process for experiments and data collections "to evaluate how customers are affected by the historic technology transitions that are transforming our nation's voice communications services" (internal quotation marks omitted)). The Commission also is undertaking a comprehensive evaluation of the correct policies for the long-run concerning access to a key form of competitive inputs and technology change — special access. *See Special Access for Price Cap Local Exchange Carriers; AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, WC Docket No. 05-25, RM-10593, Report and Order and Further Notice of Proposed Rulemaking, 27 FCC Rcd 16318, 16319, para. 1 (2012) (*Data Collection Order*); *see also Special Access for Price Cap Local Exchange Carriers; AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, WC Docket No. 05-25, RM-10593, Order, 29 FCC Rcd 14346 (Wireline Comp. Bur. 2014) (establishing the filing deadline for responding to the mandatory collection of January 29, 2015 for large businesses and February 27, 2015 for other respondents); *Comment Deadlines Further Extended in Special Access Proceeding*, WC Docket No. 05-25, RM-10593, Public Notice, 30 FCC Rcd 2716 (Wireline Comp. Bur. 2015) (extending comment due date to July 1, 2015

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to thrive and we protect consumers, especially those in vulnerable populations, who rely on POTS and other legacy services.[29]

9. Recent data indicates that 30 percent of all residential customers choose IP-based voice services from cable, fiber, and other providers as alternatives to legacy voice services. Moreover, 44 percent of households were "wireless-only" during January-June of 2014.[30] The growth of "wireless-only" homes will necessitate more backhaul services than ever before, and these services are increasingly IP-based.[31] Overall, almost 75 percent of U.S. residential customers (approximately 88 million households) no longer receive telephone service over traditional copper facilities.[32] As consumer demand for faster service speeds continues, wireless providers and their customers have benefited from the transition to Ethernet, which is more easily scalable to increasing user demands compared to copper; and, by the end of 2014, certain incumbent LECs have dropped between 30 to 60 percent of their copper-based DS1 special access circuits, replacing these special access circuits with IP offerings.[33] Moreover, advancements in technology and interconnection have changed the relationship between broadband Internet access and Voice over Internet Protocol (VoIP) applications such that users indiscriminately communicate between North American Numbering Plan (NANP) and IP endpoints on the public switched network.[34]

10. At the same time, competitive carriers today continue to rely on incumbent LEC TDM-based DS1 and DS3 special access services to serve a large number of utility, residential, and enterprise customer locations throughout the United States. Commenters assert that many areas across the country have few viable alternatives to currently-available incumbent LEC copper loop or TDM-based wholesale

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and reply comment due date to July 22, 2015); *Wireline Competition Bureau Further Extends Comment Deadlines in Special Access Proceeding*, WC Docket No. 05-25, RM-10593, Public Notice, DA 15-737 (Wireline Comp. Bur. rel. June 24, 2015) (establishing new comment due date of September 25, 2015, and reply due date of October 16, 2015). The Commission will use the data and public comment addressing the data to develop the long-term policies that will supersede the reasonably comparable wholesale access requirement adopted today.

[29] *See, e.g.*, *Technology Transitions Order*, 29 FCC Rcd at 1439, para. 15 ("Technology transitions mark progress and are a good thing – sometimes even a triumph. But change on this scale can also be disruptive. Customer expectations may become unsettled, established business models may crumble as the assumptions on which they are built become outdated, and the rules of the road may be called into question through the uncertain application of existing rules to new technologies.").

[30] *Protecting and Promoting the Open Internet*, GN Docket No. 14-28, Report and Order on Remand, Declaratory Ruling and Order, 30 FCC Rcd 5601, 5637, para. 90 (2015) (*Open Internet Order*) (citing Stephen J. Blumberg & Julian V. Luke, Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, January-June 2014 at 5, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (2014), http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201412.pdf).

[31] *See* Letter from Vonya B. McCann, Senior Vice President, Sprint, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25 et al., at 1 (filed May 20, 2015) (asserting "the critical need for access to reasonably priced special access circuits, including Ethernet, to increase capacity and expand coverage of mobile broadband services").

[32] Verizon Comments at 1-2, 4 (citing USTelecom, Research Brief: Voice Competition Data Support Regulatory Modernization at 1 (2014), http://www.ustelecom.org/sites/default/files/documents/National%20Voice%20Competition%202014_0.pdf); *see also* USTelecom Comments at 3-4 (stating that "USTelecom projects that the portion of customers relying either exclusively or mostly on traditional landlines will be only 11 percent by the end of 2015").

[33] *See* CenturyLink Comments at 10. Similar change is occurring in the supply of mass-market services. *See* Verizon Comments at 8 ("Today, Verizon passes more than 19.8 million premises with its all-fiber network, and, soon, about 70 percent of the premises in our landline territory will have access to our all-fiber facilities.").

[34] *See Open Internet Order*, 30 FCC Rcd at 5682 & 5787, paras. 187 & 401 n.1169.

inputs.[35] Competitive LECs have submitted evidence in this record and in other proceedings that, in such areas, the prices incumbent LECs charge for these replacement wholesale inputs (e.g., for 2 Mbps IP service) are significantly higher than a comparable service using a TDM-based service subject to a dominant carrier rate regulation.[36]

11. The Commission received comments from over 65 parties in response to the *Notice*, including incumbent and competitive carriers, and industry organizations representing wireless, cable, rural and communications equipment companies as well as consumer advocates, state public service commissions, and local government entities.[37] And the National Telecommunications and Information Administration weighed in on behalf of the federal government, noting that "U.S. government departments and agencies . . . are among the largest customers of U.S. telecommunication service providers" and that the vagaries of the budgeting, appropriations, and procurement processes make it difficult for the government to accommodate transitions quickly.[38] It thus noted the need for "careful planning while supporting continued growth and innovation in our communications networks."[39] These parties provided a wide range of arguments and legal analyses as well as relevant data and information on the important issues raised in the *Notice* to help the Commission make informed findings and final rules. Despite their varying positions, all the parties recognize the significance of the technology transitions and the need to protect the enduring values of our communications network.

[35] *See* Letter from Lawrence E. Strickling, Assistant Sec'y for Commc'ns and Info. and Adm'r, National Telecommunications and Information Administration, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5, at 1 (filed July 29, 2015) (NTIA *Ex Parte* Letter) ("The ongoing evolution in our communications networks is producing a more capacious, reliable, resilient, and flexible transmission infrastructure for America's consumers, businesses, and entrepreneurs. The transition presents an opportunity to support growth and innovation in over-the-top content, applications, and services to fuel the U.S. digital economy for decades to come. As the Commission is fully aware, a smooth and seamless technology transition requires careful, consistent planning and thoughtful policy decisions."). *See also* Birch et al. Comments at 5-7; *see also* XO Comments at 26 ("XO is dependent in many locations upon ILEC DS1 and DS3 services to access end user customers, having no competitive alternatives."); COMPTEL Comments at 9, 11 & n.22 (stating that "competitive carriers that rely on wholesale access make up the greater part of competition in the business market"); Windstream Comments at 15 ("CLECs also must continue to use last-mile inputs from ILECs, because there often is no viable economic case for competitors to build their own last-mile facilities to address the relatively low level of demand for bandwidth from small, medium-sized, and multi-location customers."); Letter from A.J. Peterson, HealthWise Chiropractic and Relief Neuropathy Centers of Milwaukee, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 23, 2015) ("If we are limited to a choice between only one or two providers, I am very concerned we will not be able to afford or use the services we need due to the ability of the remaining carriers to extract higher prices for limited products."); Letter from Greg Butts, Property Manager, Oak Street No 2 LLC d/b/a Sunset Ridge Cemetery, to Tom Wheeler, Chairman, FCC, GN Docket No. 13-5 et al., at 1 (filed June 19, 2015) (stating that "[i]f robust competition is restricted in the marketplace, my ability to serve my own customers could be harmed by the lack of individualized solutions and value based pricing").

[36] *See* Windstream Comments at 20 ("The pricing disparity is even more significant for purchasers that do not operate under commercial agreements or commitment plan discounts: $126.00 for a DS1 circuit under the 36-month tariffed rate, versus $1,075.00 for a 2 Mbps Ethernet circuit under AT&T's publicly available 36-month rate for Switched Ethernet, Interactive Class of Service.").

[37] *See infra* Appendix C, List of Commenters.

[38] NTIA *Ex Parte* Letter at 1-2.

[39] *Id.* at 3.

(iv) Scope of New Rules

93. *Flexibility to address individual customer service concerns.* In recognizing the concept of "*de facto*" copper retirement and requiring notice of certain retirements to individual customers, it is not our intent to limit a carrier's flexibility to respond to an individual customer's service quality concerns by migrating a customer from its copper facilities in areas where a carrier has already deployed fiber-to-the-premises. Accordingly, the advance notice requirements will not apply in situations in which a carrier migrates an individual customer from its copper to its fiber network to resolve service issues raised to the carrier by the customer (e.g., complaints by the customer of a frequent "crackling" sound on the copper voice line or frequent outages in wet conditions), provided that the retirement does not result in a change in the nature of the services being provided to the affected customers.[338] We contrast this customer-specific network migration (which will not trigger advance notice requirements or serve as *prima facie* evidence of de facto copper retirement) with migrations in which (i) the carrier requires customers in a given area to move from its copper to its fiber network as part of a planned network migration, in which case the notice process described above should be followed, or (ii) the carrier allows its copper network serving a broader geographical area (e.g., an entire neighborhood) to deteriorate in a manner that is the "functional equivalent of removal or disabling it" without first following the notice-based copper retirement process. In addition, we caution that this clarification is not a loophole and if we see evidence of abuse, we will reevaluate the issue and take action if appropriate.

94. The clarification we provide above provides carriers with sufficient flexibility to manage service calls by moving customers from a copper to a fiber network. We therefore do not believe it is necessary or appropriate to adopt the "safe harbors" from the copper retirement notice requirements we adopt today requested by Verizon — one "in which an incumbent LEC will not be considered to have

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[334] *See* Utilities Telecom Council July 29, 2015 *Ex Parte* Letter at 2 ("If carriers fail to maintain their copper circuits, utilities may experience poor performance, which could affect the reliability and security of utility infrastructure."); *id.* at Attach. (article discussing impact on utilities of carriers' failure to adequately maintain lines).

[335] WorldNet Comments at 5.

[336] We therefore disagree with assertions that the revised definition for copper retirement "begins to look like the service discontinuance process." USTelecom Comments at 8-9.

[337] By emphasizing section 214(a), we do not mean to suggest that it is our only source of authority to act with respect to carriers that fail to maintain copper facilities adequately. *See generally* Letter from Meredith Rose, Attorney, Public Knowledge, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5 et al., at 1-2 (filed June 22, 2015) (Public Knowledge June 22 *Ex Parte* Letter) (asking for clarification that consumers can use the Commission's complaint process to report *de facto* degradation problems).

[338] *See infra* Appendix A, Final Rules, section 51.332(a).

engaged in *de facto* copper retirement in areas where it has deployed a fiber network and service is available to customers over fiber facilities," and the other "in which an incumbent LEC that meets a statewide Network Trouble Reports Per Hundred Lines standard will not be found to have engaged in *de facto* retirement of its copper facilities."[339] Read literally, these safe harbors could permit immediate retirement regardless of the circumstances, e.g., there would be no need to notify customers even in the event of a planned retirement (as opposed to in response to an individual service complaint), and a carrier could allow its network serving many customers over a given area to deteriorate to the point of *de facto* retirement without first following the notice-based copper retirement process.[340]

95. The modest clarification addresses the underlying concern that carriers will be unable to transition customers to fiber when service issues arise, while still achieving the Commission's pro-consumer goals. We understand TelePacific's concerns regarding involuntary transitions from copper to fiber,[341] and the rules that we adopt strongly promote transparency regarding such transitions. However, we also recognize the need for carriers, when faced with exigent circumstances, to manage their networks and ensure that their customers do not have their service disrupted while their provider goes through the copper retirement network change disclosure process. Nor do we intend to subject carriers to liability for *de facto* retirement in situations where the issue is not widespread but instead the movement of a customer from a copper to a fiber network is the most effective and efficient means of addressing the customer's service concerns. Limiting the exception in the manner that we adopt strikes an appropriate balance between the needs of the incumbent LECs and the needs of competitive LECs and retail customers.

96. *States, Localities, and Tribes.* We recognized in the *Notice* that States, localities, and Tribal Nations play a vital role in overseeing carriers' service quality and network maintenance. Nevertheless, in light of the trend in which many states' legislatures have elected to limit the scope of their PUCs' traditional authority over telecommunications services[342] we requested comments on whether these local institutions remain able to perform key oversight functions.[343] Many commenters indicate a

[339] Letter from Maggie McCready, Vice President Federal Regulatory Affairs, Verizon, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5 et al., at 2 (filed July 28, 2015). Fiber to the Home Council seeks an even broader exception, asserting that there should not be a finding of *de facto* retirement "once a carrier announces its intention to deploy fiber to residential customer premises in a specific area . . . since the carrier has an incentive to install fiber promptly and any dispute about *de facto* retirements would only impose costs without any material benefit." Letter from Thomas Cohen, Counsel for FTTH Council, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5 et al., at 1 (filed July 24, 2015). We are not persuaded by this argument in light of recent news stories of incumbent LEC failures to follow through with announced intentions to deploy fiber. *See, e.g.*, Karl Bode, New York City Report Slams Verizon for Missing FiOS Goals (June 18, 2015), http://www.dslreports.com/shownews/New-York-City-Report-Slams-Verizon-for-Missing-FiOS-Goals-134216. In such instances, if the incumbent LEC follows the procedures set forth in the rules we adopt today, it would not subject itself to claims of *de facto* retirement.

[340] In particular, we decline to adopt the first suggested safe harbor as written because it is so broad that it would eliminate any duty to educate consumers and inform carriers about transitions to fiber, undercutting a key goal of the copper retirement rules that we adopt. We also decline to adopt Verizon's second suggested safe harbor because we find it to paint with too broad a brush. While we do not suggest that this is the intent of Verizon's proposed safe harbor, meeting a statewide average troubles per line metric set by a state would allow a carrier to mask large concentrations of bad copper lines by averaging its relatively few troubles per line numbers for its fiber lines with its relatively higher troubles per line numbers for its copper lines, again undercutting the purposes of our actions today. Letter from Tamar E. Finn, Counsel for TelePacific, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5 et al., at 2 (filed July 30, 2015) (TelePacific July 30, 2015 *Ex Parte* Letter) ("Grossly excessive trouble reports in one 'community' or location could be easily offset by a reasonable level of trouble reports elsewhere in the state.").

[341] *Id.* at 1.

[342] *See* Public Knowledge et al. May 12, 2014 Letter at 2-3.

[343] *Notice*, 29 FCC Rcd at 14994, para. 54.

strong belief that local institutions are fully capable of administering the requisite oversight—including that of copper network maintenance.[344] Several states emphasize that they still have unique insights into their jurisdictions and require a free hand to operate.[345] We agree that local authorities have an important and unique role to play. And contrary to Verizon's claims, our actions do not encroach on traditional state jurisdiction regarding ongoing maintenance obligations.[346] As stated in the *Notice*, we emphasize that we do not seek to revisit or alter the Commission's decision in the *Triennial Review Order* to preserve state authority with respect to requirements for copper retirement.[347] Furthermore, we agree that in addition to complaints directed to the Commission, complaints from retail and wholesale customers submitted to state regulatory agencies provide critical insight as to whether an incumbent LEC has failed to adequately maintain its copper networks.[348]

97. *Other Issues.* We decline to adopt CWA's suggestion that we distinguish disabling copper for service upgrades versus service downgrades.[349] Our copper retirement rules do not contain such a distinction and we decline to adopt one because the Commission and the public have an equal need to be informed about all copper retirements, regardless of the purpose. We also decline at this time to adopt Public Knowledge's proposal that we establish a process for situations where a network is damaged after a natural disaster and a carrier decides to permanently replace that network with a new technology because such a clarification is unnecessary given existing requirements.[350] The Act and our rules establish clear requirements for emergency and temporary discontinuances,[351] and the November 2014 declaratory ruling that we reaffirm today provides significant guidance regarding when an application is required when functionality is lost.[352] As the Commission noted when it granted Verizon's request for a waiver of section 63.63's requirements following Superstorm Sandy: "[T]he information required by the rule is critical to the Commission's ability to ensure that customers of communications providers are minimally affected by discontinuance, reduction, or impairment of service due to conditions beyond a provider's control."[353] Further, the discontinuance and network change notification requirements that we propose in the Further Notice and adopt today are responsive to this concern because they help to ensure that carriers will notify us and seek our approval in appropriate circumstances and meet the needs of end users, so we do not find it necessary to establish a separate process at this time.

[344] *See* Pa. PUC Reply at 9; Cal. PUC Comments at 15; NY PSC Comments at 12; TCA Comments at 4; OPC Reply at 10; Pa. PUC Comments at 11, 14-15; Verizon Comments at 12; Verizon Reply at 5-6.

[345] *See* Pa. PUC Reply at 9; Cal. PUC Comments at 15; NY PSC Comments at 12.

[346] *Cf.* Verizon Comments at 12; Verizon Reply at 5-6.

[347] *See Notice*, 29 FCC Rcd at 14994, para. 54; *Triennial Review Order*, 18 FCC Rcd at 17148, para. 284 ("[W]e stress that we are not preempting the ability of any state commission to evaluate an incumbent LEC's retirement of its copper loops to ensure such retirement complies with any applicable state legal or regulatory requirements.").

[348] *See* NASUCA Comments at 14-15.

[349] *Cf.* CWA Comments at 7.

[350] *See* Public Knowledge et al. Comments at 31; *see also* Public Knowledge June 22 *Ex Parte* Letter at 1-2; Public Knowledge July 27, 2015 *Ex Parte* Letter at 1.

[351] *See* 47 U.S.C. § 214(a); 47 C.F.R. § 63.63; *see also Section 63.71 Application of Verizon New Jersey Inc. and Verizon New York Inc. for Authority to Discontinue Domestic Telecommunications Services*, WC Docket No. 13-149 & Comp. Pol. File No. 1112, Order, 28 FCC Rcd 13826, 13832, para. 15 (Wireline Comp. Bur. 2013) (*Verizon Sandy Waiver Order*).

[352] *See Notice*, 29 FCC Rcd at 15016-18, paras. 116-19.

[353] *Verizon Sandy Waiver Order*, 28 FCC Rcd at 13832, para. 15.

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

In the Matter of	)	
	)	
Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment	)	WC Docket No. 17-84

REPORT AND ORDER, DECLARATORY RULING, AND FURTHER NOTICE OF PROPOSED RULEMAKING

Adopted: November 16, 2017 **Released: November 29, 2017**

Comment Date: January 17, 2018
Reply Comment Date: February 16, 2018

By the Commission: Chairman Pai and Commissioners O'Rielly and Carr issuing separate statements; Commissioner Rosenworcel approving in part, dissenting in part and issuing a statement; Commissioner Clyburn dissenting and issuing a statement.

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2. Expediting Copper Retirement

31. Today we eliminate or substantially scale back the copper retirement rules adopted by the Commission in 2015, because the record demonstrates that those rules have added cost and delay into the process with no apparent corresponding benefits.[106] The record shows that these rules have delayed certain incumbent LECs' plans to deploy fiber and, in some instances, to even consider foregoing fiber deployment altogether.[107] We therefore make these rule changes to ensure these delays and foregone next-generation network opportunities no longer occur on our account. In doing so, however, we continue to recognize the unique circumstances posed by the need to accommodate copper retirements in contrast to other types of network changes.

[99] *See infra* Section III.B.2.c.iii (reinstating objection procedures for copper retirements).

[100] *See Second Local Competition Order*, 11 FCC Rcd at 19491-92, paras. 216-20; *see also* 47 CFR § 51.331.

[101] 47 CFR § 51.333(c)(3).

[102] *See, e.g.*, AT&T Comments at 35; Verizon Comments at 17; CenturyLink Comments at 28-29; Verizon Reply at 19.

[103] *Cf.* CenturyLink Comments t 28 (noting that when it received requests for additional time under the pre-2015 rules, "it readily accommodated them"). *But see* AT&T Comments at 35 (asserting that objection procedures are not needed to "ensure just and reasonable rates or to protect consumers and the public interest").

[104] *See* USTelecom Comments at 23; *see also* AT&T Comments at 34-35; Frontier Comments at 24.

[105] *See Second Local Competition Order*, 11 FCC Rcd at 19493, para. 221.

[106] *See, e.g.*, AT&T Comments at 31-33; Frontier Comments at 22-23; CenturyLink Comments at 26-27; ITTA Comments at 9; AT&T Reply at 23-24; USTelecom Reply at 22-23. *But see* NASUCA Comments at 18 (noting that copper retirements are planned over an extended period of time and fiber facilities must already be in place when the retirement occurs, thus negating any burden caused by a longer notice period); AARP Reply at 2 (asserting that there is "no evidence" to support revising the copper retirement rules).

[107] *See, e.g.*, AT&T Comments at 31-33; Frontier Comments at 22-23; CenturyLink Comments at 26-27; ITTA Comments at 9; AT&T Reply at 23-24; USTelecom Reply at 22-23; Letter from Katharine R. Saunders, Managing Associate General Counsel, Federal Regulatory and Legal Affairs, Verizon, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 17-84, at 3 (filed Oct. 19, 2017) (Verizon Oct. 19, 2017 *Ex Parte* Letter).

32. When the Commission first adopted its copper retirement rules fourteen years ago,[108] fiber deployment was in its infancy and copper was the primary last-mile transmission medium for telecommunications services.[109] In seeking to foster competition in adopting rules implementing the 1996 Act, the Commission signaled its goal was not to impose the associated regulatory burdens on incumbent LECs indefinitely.[110] Rather, it intended to eventually ease those burdens once they became unnecessary.[111] Permitting competitive LECs to continue to rely on unfettered access to incumbent LECs' copper facilities when incumbent LECs are rapidly trying to modernize such networks to both compete with newer fiber-based competitors and to bring innovative and superior services to the public frustrates rather than facilitates fiber deployment. Indeed, as early as 2003, the Commission recognized "that the substantial revenue opportunities posted by FTTH deployment help ameliorate many of the entry barriers presented by the costs and scale economies,"[112] specifically noting then that "competitive LECs have demonstrated that they can self-deploy FTTH loops and are doing so at this time."[113] Thus, competitive LECs could not have been operating under the impression that they would be able to rely on incumbent LEC networks forever in the "race to build next generation networks" envisioned by the Commission.[114]

33. In the intervening years, competitors have had the opportunity to explore and develop ways to compete in a world without copper. Likewise, consumers and enterprise customers have had the opportunity to learn about the transition from legacy networks comprised of copper to next-generation fiber networks. The "gradual transition" advocated by one commenter[115] has been ongoing for many years now.[116] Although this will continue to be a gradual, organic, carrier-driven process, we believe it is important to spur the process along rather than slow it down with unnecessary regulatory burdens. We will not impede the progress toward deployment of next-generation facilities for the many because of the reticence of an ever-shrinking few.[117]

a. Retaining Distinctions Between Copper Retirement and Other Network Changes.

34. At the outset, we retain the distinction between copper retirements and other types of network changes for purposes of section 251(c)(5) notice.[118] On balance, the record supports the continued need for such a distinction.[119] In adopting the network change disclosure rules following the 1996 Act, the Commission recognized that not all types of network changes present the same level of difficulty for interconnecting carriers.[120] It thus adopted different requirements for long-term network changes, i.e., those that cannot be implemented in less than six months from the make/buy point, and

[108] *See Triennial Review Order*, 18 FCC Rcd at 17146-48, paras. 281-84.

[109] *See* id. at 17142-43, para. 274.

[110] *See First Local Competition*, 11 FCC Rcd at 15507, para. 6.

[111] *See id.*

[112] *Triennial Review Order*, 18 FCC Rcd at 17142-43, para. 274.

[113] *Id.* at 17146, para. 279

[114] *Id.* at 17141-42, para. 272.

[115] National League of Cities Comments at 6.

[116] *See, e.g.*, USTelecom Reply at 16.

[117] *See, e.g., id.* at 16, 22-23.

[118] *See Wireline Infrastructure Notice*, 32 FCC Rcd at 3285, para. 62.

[119] *See, e.g.*, Public Knowledge Comments at 4; California PUC Comments at 26; Pennsylvania PUC Comments at 7; CWA Comments at 9; Windstream Reply at 4; BT Americas Reply at 3; DC PSC Reply at 5.

[120] *See Second Local Competition Order*, 11 FCC Rcd at 19491-92, paras. 216-20.

short-term network changes, i.e., those that can be implemented in less than six months.[121] The Commission subsequently recognized that copper retirement network changes have a potentially greater impact on interoperability than other network changes because they "affect[] the ability of competitive LECs to provide service."[122] Although competitors are increasingly relying on their own facilities to compete, for at least some competitive LECs that remains the case today.

35. We agree that competitive LECs are more familiar with accommodating copper retirements now than they were 14 years ago when the Commission first adopted its copper retirement rules;[123] however, we are not persuaded that experience obviates the fact that copper retirements are more complicated and impactful than many other types of network changes. For example, where the copper retirement impacts competitive LECs providing Ethernet over Copper or purchasing TDM-based DS1s and DS3s, the affected competitive LECs often must migrate to other forms of last-mile access, change the service being offered and provide time for the retail customer to accommodate the change, or provide time for the retail customer to secure an alternative service arrangement.[124] We thus disagree with incumbent LEC commenter assertions that copper retirements require no special treatment as compared to other types of network changes.[125] As the Commission previously explained, competitors cannot be expected "to react immediately to network changes that the incumbent LEC may have spent months or more planning and implementing."[126]

36. The reforms we adopt today bring the copper retirement process closer in line with the more generally applicable network change disclosure process. However, because short-term network changes can be implemented within as little as ten days of the Commission's release of a public notice,[127] eliminating the distinction between copper retirements and other types of network changes could have adverse effects on interconnected carriers that continue to rely on available copper facilities to serve their end-users.[128] We therefore decline to eliminate the distinction altogether. The reforms discussed below reduce the burdens on incumbent LECs, achieving a balance between those minimal burdens and the benefits of adequate notice to interconnected carriers who rely on the incumbent LECs' networks.

b. Narrowing the Definition of Copper Retirement.

37. *De Facto Retirement.* We revise the definition of copper retirement to eliminate the *de facto* retirement concept that was included in the amendments made to the rules in 2015. We agree with commenters that the *de facto* retirement provision has unreasonably increased incumbent LECs' burden with no corresponding benefit,[129] and serves no purpose in the context of section 251(c)(5)'s notice

[121] *See id.* at 19492, paras. 219-20.

[122] *Triennial Review Order*, 18 FCC Rcd at 17146, para. 281.

[123] *See, e.g.*, AT&T Comments at 33-34; CenturyLink Comments at 26; AT&T Reply at 26-27.

[124] *See, e.g.*, Windstream Comments at 5-7; TelePacific Reply at 6; BT Americas Reply at 2-3; *see also* Public Knowledge Comments at 4-5; NASUCA et al. Comments at 18; Public Knowledge Reply at 4.

[125] *See, e.g.*, USTelecom Comments at 26; AT&T Comments at 33-34; Frontier Comments at 23; AT&T Reply at 22-23.

[126] *Second Local Competition Order*, 11 FCC Rcd at 19490, para. 214.

[127] *See* 47 CFR § 51.333(b); *see also* California PUC Comments at 26.

[128] *See Second Local Competition Order*, 11 FCC Rcd at 19471, para. 171.

[129] *See, e.g.*, USTelecom Comments at 25-26; Verizon Comments at 20; ITTA Comments at 8-9. *But see* Windstream Comments at 7-8; Pennsylvania PUC Comments at 5; INCOMPAS Comments at 13; Southern Co. Servs., Inc. Comments at 5; CALTEL Comments at 9; CWA Comments at 15; TelePacific Reply at 8-11; Windstream Reply at 7-8 (all noting that *de facto* retirement appears to be limited to instances of intentional neglect).

requirement.[130] The current rule requires that the incumbent LEC provide notice of copper retirement when it fails to "maintain copper loops, subloops, or the feeder portion of such loops or subloops that is the functional equivalent of removal or disabling."[131] Thus, by its very terms, a *de facto* retirement could have conceptually already occurred when notice would be required under the rule we eliminate. Unlike notice of a forthcoming change, there is no practical way to implement the requirement that an incumbent LEC provide notice of a *de facto* retirement, and therefore consumers receive no notice benefit from this concept being part of the definition of copper retirement.[132] Further, loss of service is properly addressed in the context of the discontinuance approval process established by section 214(a) of the Act.

38. We do not agree with those commenters that argue that customers located in areas where there are no options other than copper will suffer if the Commission eliminates *de facto* retirement from the notice requirement.[133] If an incumbent LEC has no plans to deploy fiber or other next-generation technology, it must maintain its copper networks, or it will have access to fewer customers. More fundamentally, we do not agree with commenters that argue that copper retirement notices are an important way for customers to learn about network deterioration[134] or that eliminating *de facto* retirement from the notice requirement "will allow incumbent carriers to neglect their copper infrastructure."[135] If copper deterioration is causing service quality issues, notice that copper deterioration is the reason for the service quality problems provides no benefit to the customers. Moreover, incumbent LECs are free to resolve those issues by migrating the customer to fiber, as long as the nature of the service being provided to the customer remains the same.[136]

39. We are similarly unpersuaded by arguments that incumbent LECs allow their copper networks to deteriorate in order to "push" their customers onto fiber.[137] The Act gives carriers, not the Commission, the authority to design their networks and choose their own architecture.[138] The Act directs that incumbent LECs need only go through the Commission's copper retirement notice process, absent a discontinuance of service that triggers the requirement to seek Commission approval under section 214(a).[139] To the extent commenters are concerned that eliminating the *de facto* retirement provision could result in an inability to seek Commission redress should an incumbent LEC willfully or otherwise allow its network to degrade, a mandatory notice requirement with no accompanying remedy should give them little solace. Either way, eliminating this unnecessary notice requirement does not foreclose other

[130] *See, e.g.*, Verizon Comments at 20-21; USTelecom Comments at 25; Frontier Comments at 24.

[131] *See* 47 CFR § 51.332(a)(iii) (defining copper retirement as including "the failure to maintain copper loops, subloops, or the feeder portion of such loops or subloops that is the functional equivalent of removal or disabling").

[132] *But see* DC PSC Reply at 4 (asserting that inclusion of *de facto* retirement, among other things, "ensure[s] that consumers are alerted when an [incumbent LEC] decides to cease its maintenance of copper facilities").

[133] *See, e.g.*, TelePacific Reply at 9.

[134] *See, e.g.*, Pennsylvania PUC Comments at 6-8; AARP Comments at 12; NASUCA et al. Comments at 9; TelePacific Reply at 9-10; DC PSC Reply at 4; *see also* Letter from Debbie Goldman, Telecommunications Policy Director, Communications Workers of America, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 17-84, at 2 (filed Sept. 26, 2017 (CWA Sept. 26, 2017 *Ex Parte* Letter).

[135] Letter from Yosef Getachew, Public Knowledge, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 17-84, at 2 (filed Nov. 6, 2017) (Public Knowledge Nov. 6, 2017 *Ex Parte* Letter).

[136] *See, e.g.*, Verizon Comments at 21.

[137] *See, e.g.*, NASUCA Comments at 8-9; Windstream Reply at 7.

[138] *See* 47 U.S.C. §§ 214(a) (providing that Commission authorization is not required for "any installation, replacement, or other changes in plant, operation, or equipment, other than new construction, which will not impair the adequacy or quality of service provided"), 251(c)(5) (requiring only that a carrier provide "reasonable public notice" of changes to its network that may affect interoperability).

[139] *See, e.g.*, CALTEL Comments at 8; *see also* USTelecom Comments at 25-26; Verizon Reply at 20.

avenues for relief. Incumbent LECs providing telecommunications services remain subject to section 214(a)'s discontinuance process requirements,[140] and in some states, they remain subject to state-level service quality requirements.[141]

40. *Feeder.* By contrast, we retain the feeder portion of the incumbent LECs' loops in the copper retirement definition because of the significant impact retirement of copper feeder can have on competitive LECs' abilities to continue to provide service to their end-user customers. We agree with commenters that recommend that an incumbent LEC seeking to retire the feeder portion of its copper-based network must comply with the copper retirement notice rules rather than the more generally applicable network change disclosure rules.[142] The record demonstrates that the benefits to both interconnected competitive LECs and their respective end-user customers of providing notice under the copper retirement rules when an incumbent LEC seeks to retire the copper feeder portion of its loops significantly outweighs the additional burdens on the incumbent LEC of complying with the copper retirement notice process in such situations. It is not "mere theory" that an interconnecting carrier might need notice of an incumbent LEC's plan to retire copper feeder.[143] The record indicates that there are interconnected carriers that rely on copper feeder to serve their end-users.[144] If we eliminate feeder from the definition of copper retirement, interconnecting carriers entitled to "reasonable notice" under section 251(c)(5) might not receive sufficient notice to continue to provide services to their end-user customers or to enable those end-users to transition to another provider.[145] Retaining feeder in the definition ensures that these interconnected carriers are provided notice of copper retirement in the same timeframes as interconnected carriers that rely on copper loops or sub-loops to serve their end-users. Moreover, we find our additional streamlining of the copper retirement notice process should address the primary concerns of commenters advocating for elimination of feeder from our copper retirement rules.[146]

c. Streamlining the Copper Retirement Notice Process

41. Today we eliminate the changes made to the copper retirement rules adopted in 2015 and reinstate, with certain modifications, the rules applicable to copper retirements that existed prior to that time. We find broad support in the record for these changes that will ease the regulatory burdens on incumbent LECs in transitioning to next-generation networks, affording them greater flexibility and eliminating the delays and additional costs imposed by section 51.332's rigid requirements.[147] We also find that these changes, along with incumbent LECs' greater freedom to engage potentially affected parties earlier in the planning process, will simultaneously accommodate the concerns of most

[140] *See* 47 U.S.C. §§ 201(b), 214(a).

[141] *See, e.g.*, CALTEL Comments at 8 (pointing to California PUC's service quality requirements).

[142] *See, e.g.*, Windstream Comments at 7; INCOMPAS Comments at 13; NASUCA et al. Comments at 8-9; CALTEL Comments at 8; Pennsylvania PUC Comments at 5; California PUC Reply at 15; Windstream Reply at 7-8; TelePacific Reply at 8.

[143] *See* Frontier Comments at 24.

[144] *See, e.g.*, Windstream Comments at 7; INCOMPAS Comments at 14; Pennsylvania PUC Comments at 5; TelePacific Reply at 8; *see also Triennial Review Order*, 18 FCC Rcd at 17146-47, para. 281; *Second Local Competition Order*, 11 FCC Rcd at 19491, para. 216 (noting that the inability to maintain interoperability with the incumbent LEC's network "could interrupt service between the two service providers.").

[145] *See, e.g.*, Windstream Comments at 7; INCOMPAS Comments at 14; Pennsylvania PUC Comments at 5; TelePacific Reply at 8; *see also Triennial Review Order*, 18 FCC Rcd at 17146-47, para. 281.

[146] *See, e.g.*, ITTA Comments at 5, 8-9; CenturyLink Reply at 19.

[147] *See, e.g.*, USTelecom Comments at 22-23; CenturyLink Comments at 26-27; AT&T Comments at 31-32; Frontier Comments at 22-23; ITTA Comments at 8, 10; Verizon Reply at 16; CenturyLink Reply at 17-18; USTelecom Reply at 22; Corning Inc. Comments, Attach. A at 31; Fiber Broadband Ass'n Comments at 10-11.

commenters by affording sufficient time to accommodate planned changes and addressing parties' needs for adequate information and consumer protection.[148]

42. At the outset, we disagree with commenters that assert that the record contains no evidence that alleviating the significant burdens on incumbent LECs imposed by the copper retirement rules adopted in 2015 will spur broadband deployment.[149] The record shows that the burdens caused by delays in copper retirements resulting from expansive notice obligations can be quite significant, including costs associated with the ongoing need to maintain various parallel computer systems and retain dedicated engineering staff.[150] Indeed, record evidence suggests savings of $45-$50 per home passed per year achieved by retiring copper facilities.[151] Couple that with Verizon's statement that it has filed to retire copper facilities at 3.8 million locations,[152] and it appears that Verizon's copper retirements alone may result in between $171 million and $190 million in cost savings that could be put to use in deploying next-generation networks. And expediting the copper retirement process could contribute to 26.7 million incremental premises being passed by fiber over a five-year period.[153] Requiring that incumbent LECs forego these potential savings results in opportunity costs and creates a disincentive to broadband investment.[154]

43. We disagree with arguments that the changes we adopt today to our copper retirement notice process "may make it easier for providers to shut down networks and services."[155] We start by noting that incumbent LECs, like their competitors, already have marketplace incentives to maintain service to customers. What is more, such arguments confuse the copper retirement notice process—which applies only when a carrier makes changes to its network—with the discontinuance process. If an incumbent LEC's copper retirement will result in a discontinuance of service, the carrier must still go through the process of obtaining Commission authorization.[156] In that process, customers can still object to the proposed discontinuance and raise concerns regarding the adequacy of available alternative services,[157] one of the five factors the Commission traditionally considers when evaluating discontinuance applications.[158]

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[148] *See, e.g.*, Public Knowledge Comments at 6-7; AARP Comments at 12-15; California PUC Comments at 21; INCOMPAS Comments at 13-14; Windstream Reply at 3.

[149] *See, e.g.*, NASUCA et al. Comments at 12-13; AARP Comments at 12, 16; Public Knowledge Reply at 1.

[150] *See* Corning Comments at 5-6; Frontier Comments at 22-23; Verizon Reply at 1-2; AT&T Reply at 24; CenturyLink Reply at 17-18; *see also* USTelecom Comments at 22-23; Verizon Comments at 17; CenturyLink Comments at 27.

[151] *See* Corning Comments, Attach. at 31. According to Corning, this savings estimate breaks down as follows: First, by "[r]educing the copper footprint [the incumbent LEC] can save upwards of 80% of central office space," which "equates to a savings of roughly $35 per home passed per year of real estate expense." Second, "electrifying the copper network and equipment takes a significant amount of electricity to operate, estimated at $1.49 per home passed per year of electricity expense." Finally, "there is a large amount of incremental maintenance for the copper network," and "[i]n 2013, Verizon estimated that in areas where both FiOS and copper existed, they were spending more than $200 million annually on the copper network, or roughly $10 per home passed with both fiber and copper per year of maintenance expense." *Id.* at 30.

[152] *See* Verizon Comments at 3.

[153] *See* Corning Comments at 2.

[154] *See id.* at 6; *see also* CenturyLink Comments at 27.

[155] Greenlining Institute Comments at 7.

[156] *See* 47 U.S.C. § 214(a).

[157] 47 CFR § 63.71(a)(5).

[158] *See Verizon Telephone Companies Section 63.71 Application to Discontinue Expanded Interconnection Service Through Physical Collocation*, Order, 18 FCC Rcd 22737, 22742, para. 8 (2003) (*Verizon Expanded*

(continued....)

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

In the Matter of	)	
	)	
Ensuring Continuity of 911 Communications	)	PS Docket No. 14-174
	)	

REPORT AND ORDER

Adopted: August 6, 2015 **Released: August 7, 2015**

By the Commission: Chairman Wheeler and Commissioners Clyburn, Rosenworcel, and Pai issuing separate statements; Commissioner O'Rielly concurring and issuing a statement.

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I. INTRODUCTION AND SUMMARY

1. In this *Report and Order*, the Federal Communications Commission (FCC or Commission) takes important steps to ensure continued public confidence in the availability of 911 service by providers of facilities-based fixed, residential voice services in the event of power outages.[1]

2. For over one hundred years, consumers have trusted that they will hear a dial tone in an emergency even when the power is out. Now, as networks transition away from copper-based, line-powered technology, many are aware of the innovation this transition has spurred in emergency services, but many consumers, remain unaware that they must take action to ensure that dial tone's availability in the event of a commercial power outage. The Commission's own consumer complaints portal reveals frustration over the failure of service providers to adequately inform subscribers about how to self-provision backup power in order to access 911 services in a power outage. This period of transition has the potential to create a widespread public safety issue if unaddressed.

3. Accordingly, we create new section 12.5 of our rules to place limited backup power obligations on providers of facilities-based fixed, residential voice services that are not line-powered to ensure that such service providers meet their obligation to provide access to 911 service during a power outage, and to provide clarity for the role of consumers and their communities should they elect not to purchase backup power. To be sure, many providers of residential voice communications already offer some level of backup power to consumers. However, the vital importance of the continuity of 911 communications, and the Commission's duty to promote "safety of life and property through the use of wire and radio communication,"[2] favor action to ensure that all consumers understand the risks associated with non-line-powered 911 service, know how to protect themselves from such risks, and have a meaningful opportunity to do so. Specifically, we require all providers of facilities-based, fixed, voice residential service that is not line powered[3] -- including those fixed applications of wireless service offered as a "plain old telephone service" (POTS) replacement -- to offer new subscribers the option to purchase a backup solution that provides consumers with at least 8 hours of standby power during a commercial power outage, which will enable calls to 911.[4] In addition, we require these providers to offer, within three years of the effective date of the eight hour obligation, at least one option that provides a minimum of 24 hours of 911 service.

4. Additionally, we require all providers of facilities-based, fixed, voice residential service that is not line-powered to notify subscribers, at the point of sale and annually thereafter until September 1, 2025, of the availability of backup power purchasing options, use conditions and effect on power source effectiveness, power source duration and service limitations, testing and monitoring, and replacement details. Additionally, we direct the PSHSB to work with CGB to develop, prior to the implementation date of these rules for smaller providers, as herein defined, non-binding guidance with respect to the required notifications to subscribers. We limit these obligations to ten years as that should be enough time to ensure that overall consumer expectations regarding residential voice communications are aligned with ongoing technology transitions.

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[1] Unless otherwise noted, all citations to comments or *ex parte* filings in this *Report and Order* refer to filings in PS Docket No. 14-174.

[2] 47 U.S.C. § 151.

[3] A provider currently offering line-powered service is subject to these rules to the extent it offers a covered non-line-powered service while these rules are in effect.

[4] The backup power offered for purchase under our rule must include power for all provider-furnished equipment and devices installed and operated on the customer premises that must remain powered in order for the service to provide 911 access. As noted below, our rule does not extend this obligation to cordless telephones purchased by the homeowner.

5. Finally, we encourage covered providers to conduct tailored outreach to state and local disaster preparedness entities to ensure that consumables and rechargeable elements associated with backup power technical solutions deployed in their area are well understood so that communities may prioritize restocking and/or recharging in response to extended power outages.[5]

II. BACKGROUND

6. Our Nation's communications infrastructure and the services available to consumers are undergoing technology transitions. The Commission has recognized that these transitions will bring enormous benefits to consumers, but also that they raise important questions about how to appropriately carry out our obligations set forth in the Communications Act, including promoting public safety and national security, and protecting consumers.[6]

7. To further these statutory objectives, in November 2014, the Commission adopted a *Notice of Proposed Rulemaking* (*Notice*) seeking to ensure reliable backup power for consumers.[7]. Specifically, the Commission sought comment on the "communications services we should include within the scope of any backup power requirements we may adopt" and "propose[d] that any potential requirements would apply to facilities-based, fixed voice residential services, such as interconnected Voice over Internet Protocol (VoIP), that are not line-powered by the provider."[8] The Commission proposed that "providers should assume responsibility for provisioning backup power that is capable of powering network equipment at the subscriber premises during the first 8 hours of an outage" but sought comment on what should happen in the event of an extended commercial power outage.[9] The Commission also recognized the importance of outreach to consumers on the effect of commercial power outages to their communications services and sought comment on effective consumer notification.[10]

III. DISCUSSION

8. Communications services play an essential role in the delivery of public safety services, particularly 911, and that role is especially prominent during emergencies that lead to power outages. In the *Notice* in this proceeding, we sought comment on the means to ensure that consumers have access to minimally essential communications, including 911 calls and telephone-based alerts and warnings, during a loss of commercial power.[11] In this *Report & Order*, we take steps toward that goal by establishing clear lines of responsibility for ensuring continued 911 service during such commercial power outages and by: (1) establishing a phased-in obligation for the offering of backup power solutions to consumers; and (2) requiring covered providers to engage in disclosure of the risks associated with these outages and steps consumers may take to address those risks.

9. As discussed in greater detail below, we require that providers of non-line-powered facilities-based, fixed, voice residential service, including fixed wireless service intended as POTS

[5] We defer action on issues raised in the *Notice of Proposed Rulemaking* regarding backup power for other services. *Ensuring Customer Premises Equipment Backup Power for Continuity of Communications, et al.*, PS Docket No. 14-174, et al., Notice of Proposed Rulemaking and Declaratory Ruling, 29 FCC Rcd 14968, 14975 para. 11 (2014) (*Notice*).

[6] *See generally Notice; Technology Transitions, et al.*, GN Docket No. 13-5 et al., Order, Report and Order and Further Notice of Proposed Rulemaking, Report and Order, Order and Further Notice of Proposed Rulemaking, Proposal for Ongoing Data Initiative, 29 FCC Rcd 1433, 1435 para. 1 (2014) (*Technology Transitions Order*).

[7] *Notice*, 29 FCC Rcd at 14975-76, 14987, paras. 11-13, 33.

[8] *Id.* at 14987, para. 33.

[9] *Id.* at 14987, para. 35; 14990, para. 40.

[10] *Id.* at 14990, para. 39.

[11] *Id.* at 14988, para. 34 (seeking comment on what services should be considered "minimally essential" for purposes of continuity of power).

replacement, offer, at the subscriber's option and expense, a backup power solution that provides 911 access for 8 hours in the event of commercial power loss. Within three years, providers must also offer a 24-hour backup power solution. We also require covered providers to explain at point of sale how the subscriber may extend the provision of backup power during longer, multi-day outages through devices such as solar chargers, car chargers or mobile charging stations and to direct customers to sources of such equipment. No provider will be required to install backup power unless requested by, and at the expense of, the subscriber, and no subscriber will be forced to purchase unwanted equipment. Rather, our rules will ensure that subscribers who so elect can obtain backup power simply and conveniently when activating a covered service. In addition, in order to ensure that consumers are adequately informed in determining whether to make this election, we adopt disclosure requirements designed to ensure that subscribers are aware of the backup power options available for their service, including installation and other usage instructions. We also encourage, but do not require, providers to conduct tailored outreach to state and local disaster preparedness entities to ensure that consumables associated with their backup power technical solutions are well understood so that communities may prioritize restocking and/or recharging in support of extended power outages.

A. Need for Line Powering or an Alternative Source of Power During Outages

10. In the *Notice*, we noted that, in the past, consumers have relied upon service providers for backup power for their residential landline phones.[12] That is, equipment on the subscriber premises of those still served by copper networks continued to work during commercial power outages as long as the handset or other subscriber premises equipment did not need to be plugged into an electrical outlet to function. We proposed and sought comment on steps we could take to safeguard continuity of communications throughout a power outage across networks that provide residential fixed voice service used to dial 911, including the possible adoption of new rules.[13] Based on the record of this proceeding, we conclude that in order to ensure the availability of 911 service in the provision of facilities-based, fixed, voice residential services during power outages, we must adopt rules to require, among other things, either line powering or (at the subscriber's option and expense) an alternative means of maintaining 911 access during commercial power outages.

11. During a power outage, many subscribers must rely on a battery back-up, or an uninterruptible power supply (UPS),[14] to ensure that their service will continue to operate. That is, many subscribers cannot rely on the availability of continuous power that is sufficient to provide basic telephony indefinitely in their homes.[15] Specifically, modern fiber and cable networks do not provide power to operate necessary equipment at the subscriber location, including network devices (e.g., cable modems, optical network terminals) and telephones.[16] The deployment of a VoIP service requires that

[12] *Id.* at 14975, para. 11; *see also* Communications Security, Reliability, and Interoperability Council (CSRIC), Final Report – CPE Powering at 5 (2014), available at https://transition.fcc.gov/pshs/advisory/csric4/CSRIC%20WG10%20CPE%20Powering%20Best%20Practices%20Final%20Draft%20v2%20082014.pdf (CSRIC Report). CSRIC is a multi-stakeholder advisory body charged with making "recommendations to the FCC regarding ways it can strive for security, reliability, and interoperability of communications systems." *See* FCC, CSRIC Charter, https://transition.fcc.gov/bureaus/pshs/advisory/csric5/CSRIC_Charter_Renewal_2014.pdf.

[13] *Notice* 29 FCC Rcd at 14969, para. 2.

[14] *See* ENERGY STAR® Program Requirements, Product Specification for Uninterruptible Power Supplies (UPSs) https://www.energystar.gov/ia/partners/prod_development/new_specs/downloads/uninterruptible_power_supplies/ES_UPS_V1_Draft1_Specification.pdf?0544-2a1e (defining a UPS as: "Combination of convertors, switches, and energy storage devices (such as batteries) constituting a power system for maintaining continuity of load power in case of input power failure.").

[15] *Notice*, 29 FCC Rcd at 14987, para. 33.

[16] *See id.*; CSRIC Report *at* 8.

analog voice signals be converted to IP, using a voice codec.[17] The most commonly deployed model for VoIP services in the United States places the Analog Telephone Adapter (ATA) in a network device that is installed inside of the living unit. This ATA function is commonly used in hybrid fiber coax cable networks that use embedded multimedia terminal adapters (eMTA), twisted pair telephone (DSL) networks and increasingly Fiber-to-the-Home (FTTH) Optical Network Units (ONUs), also called Optical Network Terminals (ONTs).[18] Voice codecs support voice, fax, and other legacy TDM services over IP, and their function is sometimes referred to as the ATA.[19] Network devices with the embedded ATA function are powered directly by AC power or through a UPS that converts AC to DC power.[20] According to the CSRIC report, in other use cases, the ATA function is being placed in consumer owned devices, creating more challenges for battery backup of VoIP services.[21]

12. Given that consumers are increasingly relying on new types of service for residential voice communications, and that in many areas traditional line-powered 911 service is now, or is soon likely to be, no longer be available,[22] the *Notice* asked whether it was reasonable for providers to continue to bear primary responsibility for backup power, and if so, to what extent.[23] We also stated that it was our intention to: (1) establish clear expectations for both providers and subscribers as to their responsibilities throughout the course of an outage; and (2) minimize potential for lapses in service because of subscriber confusion or undue reliance on the provider with respect to backup power for equipment at the subscriber premises.[24] The *Notice* communicated a desire to adopt baseline requirements for ensuring continuity of power for devices at the subscriber location during commercial power outages.[25] We acknowledged that backup power is not solely a copper retirement issue.[26] Thus, we intended to address backup power at the subscriber premises also for those who have already migrated or been transitioned to an IP-based network.[27]

13. We adopt the rules that follow because we believe that it is essential for all consumers to be able to access 911 emergency services during commercial power outages, especially those outages caused by catastrophic storms or other unpredictable events, and to understand how to do so. Ensuring the ability to maintain such service is a vital part of our statutory mandate to preserve reliable 911 service, and more generally, our statutory goal to promote "safety of life and property through the use of wire and radio communication."[28] We agree with the National Association of State Utility Consumer Advocates (NASUCA) that it is unlikely that our concerns would be adequately addressed without the adoption of regulatory requirements.[29] We are supported in our conclusion by commenters such as the Pennsylvania Public Utility Commission (PA PUC), which urges the Commission to adopt baseline requirements for ensuring continuity of power during commercial power outages applicable to providers of interconnected

[17] CSRIC Report at 6.

[18] *Id.* at 8.

[19] *Id.* at 8.

[20] *Id.* at 8.

[21] *Id. at* 6.

[22] *Notice*, 29 FCC Rcd at 14976, para. 13.

[23] *Id.* at 14988, para. 35.

[24] *Id.* at 14987, para. 32.

[25] *Id.*

[26] *Id.* at 14976, para. 13

[27] *Id.*

[28] 47 U.S.C. § 151.

[29] NASUCA Reply at 8.

VoIP-based services that do not provide line power at their central office, but rather rely on backup power.[30]

14. Specifically, we find that public safety officers, first responders and other public officials have a need to communicate with citizens through whatever means possible, and 911 service plays an important role in this regard.[31] Indeed, consumer advocates and 911 providers emphasize the need to adopt robust backup power requirements to ensure public safety.[32] For example, Public Knowledge notes that right now consumers of traditional landline service are "guaranteed backup power during power outages" and "many consumers keep their landline service specifically to retain this feature."[33] Public Knowledge further states that, "[w]ith the advent of cordless phones the only time the consumer worried about backup batteries was for their cordless phone or they simply retained a traditional phone to use during emergencies."[34]

15. NASUCA and many other commenters agree that Commission action will help preserve consumers' ability to access 911 service.[35] Specifically, NASUCA "fully supports the Commission's determination to ensure reliable backup power for consumers of IP-based voice and data services across networks that provide residential, fixed service that substitutes for and improves upon the kind of traditional telephony used by people to dial 911."[36] According to NASUCA, "[b]ackup power requirements will help ensure that service will continue in a power outage."[37] The National Association of State 911 Administrators (NASNA) similarly observes that "[t]he transition from legacy copper loops to other network technologies means that an important safety net—Central Office provisioning of line power

[30] Pennsylvania Public Utility Commission (PA PUC) Comments at 8. *See also* New York Public Safety Commission (NYPSC) Comments at 4 (stating that "where line equipment normally requires commercial power, the FCC should require that companies provide contingent backup power to ensure that network availability is maintained during commercial power outages).

[31] *See* CSRIC Report at 19.

[32] *See* Public Knowledge, Appalshop, Benton Foundation, Center for Media Justice, Center for Rural Strategies, Common Cause, The Greenlining Institute, Media Action Center, Media Literacy Project, National Consumer Law Center (on behalf of its low-income clients), New America Foundation Open Technology Institute, Rural Broadband Policy Group, and TURN (The Utility Reform Network) (jointly, "Public Knowledge *et al.*") Comments at 21-28. For ease of reference, these joint commenters may also be referred to in this document as "Public Knowledge." *See also* Intergovernmental Advisory Committee Recommendation 2013-5, "Response to Technology Transitions Task Force Request for Comments on Potential Trials of Transitions to Internet Protocol Based Networks," adopted July 8, 2013, at 3 available at https://transition.fcc.gov/statelocal/recommendation2013-05.pdf (asserting that all new technologies must maintain system resiliency, especially with respect to power supply, that powering of copper legacy networks separate from the electric grid historically helped to make them extremely resistant to power outages, ad that "uninterrupted, resilient, extended-use power for telephone access must be available in the interest of public safety.").

[33] *See* Public Knowledge Reply at 6. Although Public Knowledge's filing is styled "Comments," it was filed after the deadline for initial comments and is thus referred to in this document as a "Reply."

[34] *Id.* at 8.

[35] *See e.g.* NASUCA Comments at 2; Communications Workers of America (CWA) Comments at 1; AARP Comments at 23 (arguing that network providers that offer voice services must be responsible for provisioning services that are consistent with public safety objectives and that the lack of backup power for CPE places consumers, their neighbors, and first responders at risk); PA PUC Comments at 5 (arguing that it is imperative that consumers who have either migrated or been transitioned to an IP-based network or new facilities continue to have reasonable CPE backup power alternatives as a means to ensure continuity of communications throughout a commercial power outage).

[36] NASUCA Comments at 2.

[37] *Id.*

to the subscriber premises—will disappear unless the Commission takes action to mitigate it."[38] The Communications Workers of America (CWA) asserts that CWA, consumer organizations, state regulatory commissions, and public safety associations "support Commission proposals to facilitate the transition to high-speed broadband networks, protect consumers and promote public safety by *upgrading* Commission rules regarding back-up power, network changes, and service discontinuance."[39]

16. We agree that this period of transition gives rise to the need for "upgrading Commission rules." We observe that the consumers most at risk of losing continuity of 911 communications during commercial power outages are those in the midst of transitioning from legacy copper, or that are new to non-copper media, because they may currently assume they will be able to reach 911 during a power outage. For example, Public Knowledge asserts that "the new technologies with which AT&T and Verizon propose to replace traditional POTS are not self-powered, do not work with vital devices on which consumers rely, and are not available in every community."[40] Public Knowledge further argues that, "[w]hile technology transitions hold tremendous promise for a state-of-the-art communications network, the loss of guaranteed backup power or shifting backup power responsibility to the consumer are serious changes that could end up creating a network that serves some and not others."[41]

17. We agree with the commenters who assert that transitions to new technology should not result in 911 service being more vulnerable than when consumers used the legacy network.[42] As we stated in the *Notice*, the absence of line powering for some voice services (such as those provided by cable companies) was not an issue that needed to be addressed when legacy line-powered network options were widely available, but it must be addressed as more and more residential subscribers are faced with only VoIP and other residential IP-based services (or legacy services delivered over fiber) as options, because these services typically will require a backup power source to function during power outages.[43] Accordingly, we focus our requirements to support the continued transmission of 911 communications for service that will no longer have line powering capabilities. Because of the importance of the continuity of 911 communications, we also include under the new requirement providers that may have never provided line powering, but that provide services intended to replace traditional POTS services on which consumers have relied for continuous access. With the accelerating transition to new technologies, consumers of these services will no longer have competitive alternatives that come with line-powering capabilities.

18. We reiterate our observation in the *Notice* that adequate and reliable access to 911 services and functionalities during emergency conditions is a long-standing public policy objective. Although we recognize that we are in the midst of sweeping change, we believe that voice communications continue to play an essential and central role in the delivery of public safety services,[44] and that this role does not diminish during events that cause power outages. Indeed, it is at these times that consumers most need to know that they will be able to use their home telephone to get help through 911.

19. We recognize that, as noted by some commenters, many users of interconnected VoIP service may well be unconcerned about backup power, choosing instead to rely on their mobile phones or

[38] National Association of State 911 Administrators (NASNA) Comments at 1-2.

[39] CWA Comments at 1 (emphasis added).

[40] Public Knowledge Reply at 7.

[41] *Id.* at 6.

[42] *See, e.g., id.*

[43] *Notice*, 29 FCC Rcd at 14987, para. 33.

[44] *See, e.g., id.* at 14975, para. 12.

alternative backup sources.[45] Nonetheless, because of the critical nature of 911 communications, we are not persuaded by the argument that there is no need for action to ensure the continuity of 911 communications to homes across the country. Nor are we convinced that we should abandon this effort because of claims that consumer expectations, which have developed over decades, are already reset such that they no longer expect their home phone to work during power outages.[46] Consumers who have yet to abandon (or who have only recently abandoned) line-powered service may not have had their expectations "reset." At this time of transition, it is these consumers who are more likely to mistakenly believe that they can access emergency services during a power outage when the line power option had already been eliminated.

20. We find merit in NASUCA's argument that the public interest requires the industry to be responsible for ensuring that its subscribers at least have some option to purchase backup power, either from the service provider or a third party.[47] Therefore, as more fully discussed below, we conclude that the public interest would be best served by ensuring the option for continued access to backup power to maintain continuity of 911 communications during a loss of commercial power.

21. We have previously recognized that the benefits associated with reliable 911 service are substantial.[48] The provision of backup power for network equipment at the subscriber premises promotes the "safety of life and property through the use of wire and radio communication,"[49] by enabling 911 calls for subscribers of the covered services, when the power is out. Specifically, the rules we adopt today will preserve safety of life by enabling the use of VoIP and other non-line powered services to contact 911 in a commercial power outage, which is what millions of Americans have come to expect from their "home phone."[50] We expect that providing the option for at least 8 hours of backup power would ensure the ability to make many life-saving 911 calls during commercial power outages.[51] Therefore, we find, as we

[45] *See, e.g.* Corning Comments at 2-6; AT&T Comments at 12.

[46] *See, e.g.* ADTRAN Comments at 17-21 (asserting that historically the monopoly telephone service provider offered the service, CPE and power; and this model and the related expectations no longer exists); American Cable Association (ACA) Comments at 5-7 (arguing that the voice service market has evolved and consumers have already shifted from line power copper to use of wireless and wireline technologies with backup power capabilities); and Telecommunications Industry Association (TIA) Comments at 5 (noting that consumers understand the trade-offs between legacy devices that did not require their being involved in powering them, and mobile and non-tethered services).

[47] NASUCA Reply at 4.

[48] *In The Matter Of Improving 911 Reliability, Reliability And Continuity Of Communications Networks, Including Broadband Technologies*, PS Docket Nos. 13-75, 11-60, Report and Order, 28 FCC Rcd 17476, 17500-03, paras. 73-79 (2013) (*Improving 911 Reliability Report and Order*); *In The Matter Of Facilitating The Deployment Of Text-To-911 And Other Next Generation 911 Applications Framework for Next Generation 911 Deployment*, PS Docket Nos. 11-153, 10-255, Second Report and Order and Third Further Notice of Proposed Rulemaking, 29 FCC Rcd. 9846, 9852-57, paras. 12-22 (2014) (*Facilitating the Deployment of Text-To-911 Second Report and Order*); *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Fourth Report and Order, 30 FCC Rcd 1259, 1316-20, paras. 158-66 (2015).

[49] 47 U.S.C. § 151.

[50] *Notice*, 29 FCC Rcd at 14975, para. 11.

[51] Even if just one life is saved per year through any of these associated benefits, the benefits to the nation could be calculated at $9.1 million. The value of a statistical life (VSL) is currently estimated at $9.1 million. *See* Memorandum from Polly Trottenberg, Under Secretary for Policy, Office of the Secretary for Transportation, and Robert S. Rivkin, General Counsel, Department of Transportation, Guidance on Treatment of the Economic Value of a Statistical Life in U.S. Department of Transportation Analyses at 1 (Feb. 28, 2013), http://www.dot.gov/sites/dot.gov/files/docs/VSL Guidance_2013.pdf (*DOT Guidance on Economic Value of a Statistical Life*). The Department of Transportation defines VSL as "the additional cost that individuals would be

(continued....)

have before, that "[r]eliable 911 service provides public safety benefits that, while sometimes difficult to quantify, are enormously valuable to individual callers and to the nation as a whole."[52]

22. We have also previously found that greater access to 911 enables other public safety-related benefits as well. The Commission's "Text-to-911" proceeding concluded that increasing access to 911 "could yield other benefits, such as reduced property losses and increased probability of apprehending criminal suspects.[53] Also, the increased ability to place 911 calls necessarily means that there is an increased ability to receive calls in an emergency, including calls from public entities attempting to disseminate important information during widespread emergencies (such as evacuation notices).[54] Many communities have installed such a function that "has proven to be effective in other counties and cities, such as San Diego during the fires of 2007."[55]

B. Covered Services

23. In the *Notice*, we sought comment to help identify the most essential communications services that a customer would need to get emergency help during a power outage. We referred to this in the *Notice* as "minimally essential" communications.[56] We intended to afford sufficient power for minimally essential communications, including and especially 911 calls and the receipt of emergency alerts and warnings.[57]

24. We also noted that voice services historically have been the primary means of contacting 911 for emergency help.[58] Moreover, we observed that line-powered service can operate continuously and indefinitely during a commercial power failure, and does not require a backup power source to maintain continuity of communications for access to 911. Thus, we proposed that any rules apply "to facilities-based, fixed voice services, such as interconnected VoIP, that are not line-powered by the provider."[59]

25. Consistent with this proposal, we conclude that it would be in the best interest of the public to apply our rules to facilities-based, fixed voice services, such as interconnected VoIP, that are not line-powered by the provider.[60] Our conclusion is based on the fact that, as we stated in the *Notice*, voice

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willing to bear for improvements in safety (that is, reductions in risks) that, in the aggregate, reduce the expected number of fatalities by one." *Id.* at 2.

[52] *Improving 911 Reliability Report and Order*, 28 FCC Rcd at 17500, para 73.

[53] *Facilitating the Deployment of Text-To-911 Second Report and Order*, 29 FCC Rcd at 9862, para. 33 ("For example, property losses may be reduced if text-to-911 is used to promptly inform authorities of a fire, thereby enabling the fire department to reach the emergency sooner."); *id.* at n.95.

[54] *See infra* para. 81.

[55] Areej M. Sadhan, Evaluating the Reverse 9-1-1 System in Santa Clara County: Does the Process Work? at 50 (2014), http://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=1378&context=etd_projects; *see also, e.g.*, Salt Lake Valley Emergency Communications Center, Reverse Phone Notification for Herriman Wildfire (Sept. 21, 2010), http://vecc9-1-1.com/reverse-phone-notification-for-herriman-wildfire/.

[56] *Notice*, 29 FCC Rcd at 14988, para. 34.

[57] *Id.*

[58] *Id.*

[59] *Id.* at 14987, para. 33.

[60] We note that in adopting the rules in this order, we do not need to make, nor are we making, any new broader finding concerning the jurisdictional nature of interconnected VoIP or state authority with respect to interconnected VoIP. *See, e.g., IP-Enabled Services; E911 Requirements for IP-Enabled Service Providers*, WC Docket Nos. 05-196, 04-36, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd. 10245, 10261-66, ¶ 26 (2005) (continued....)

service is still the primary means of reaching help through 911.[61] We clarify that a wireless voice service is "fixed" for purposes of our rules if it is marketed as a replacement for line-powered telephone service and is intended primarily for use at a fixed location. We further clarify that whether a wireless service is "fixed" does not depend on the regulatory classification of the service under Federal or state law, or on the mobile capabilities of the service. Similarly, the use of a femtocell or similar equipment in a residential setting does not automatically convert a mobile service into a fixed service. The decisive factor is whether the service is intended to function as or substitute for a "fixed" voice service.

26. Although the rule we adopt today would allow for calls other than to or from 911, we find there is not currently a means to prioritize the provision of power for only some voice calls (such as 911 calls) over other communications (such as calls to friends and family). Many commenters generally agree that there is no practical way to maintain power for only some calls. For example, according to Verizon, calibrating a provider's battery backup obligations and capabilities based upon essential versus non-essential calls would be inconsistent with consumer's expectations, and unnecessarily complex.[62] ITTA, the Alarm Industry Communications Committee (AICC), NASUCA, and others argue that it would be technically difficult, if not impossible, to distinguish among certain types of calls or functions in a way that would allow rapid load-shedding of non-essential communications to conserve backup power, if minimally essential communications were defined as only 911 or emergency communications.[63]

27. Some commenters argue for an even broader definition of covered services, citing various examples.[64] Although we recognize that limiting the definition as we have done omits some services on which consumers currently rely in emergencies, we expect that both the consumer backup power needs and our rules will evolve.[65] More importantly, we do not more broadly define covered services because we find that at this time it would be in the best interests of the public to limit application of our rules to discharge our statutory duty to ensure the continued viability of 911. Imposing specific obligations on providers to support other communications could introduce confusion and impose costs on providers that may well exceed the incremental benefits. This is particularly true given the many backup power solutions on the market today that are capable of supporting both essential and non-essential communications.

28. We reject the argument of NCTA and others that adopting backup power rules exclusively for fixed services unduly favors competing mobile services. The rules we adopt herein are

(Continued from previous page)
(requiring interconnected VoIP providers to comply with E911 requirements "regardless of the regulatory classification" of such services).

[61] *Notice*, 29 FCC Rcd at 14988, para. 34.

[62] Verizon Reply at 11.

[63] *See, e.g.*, Alarm Industry Communications Committee (AICC) Comments at 6; ITTA Comments at 21; NASUCA Comments at 10.

[64] For example, AARP notes that voice is only one element of a growing set of communication applications that will include a variety of connected devices that enable real-time communication and monitoring. AARP Comments at 11. Appalshop, Inc. stresses the need for support and function of other devices that consumers and businesses have come to rely on, such as, but not limited to, heart monitors, security alarms, medical emergency alarms, devices that provide access to technology for people with disabilities, credit card machines, and fax machines. Appalshop Comments at 3. And, still others have expressed concern about the extent to which limited backup power will be able to support broadband communications that are needed specifically to sustain IP-based relay services in the event of a power outage in an IP environment.

[65] *See* Association of Public-Safety Communications Officials-International, Inc. (APCO) Comments at 3 (noting that ideally, all NG-9-1-1 capabilities should be considered minimally essential; however, at least initially, multi-media capabilities could become a drain on limited back-up power capabilities for CPE; and should that be the case, at least voice calls and texts to 9-1-1 should be considered minimally essential communications, with the eventual goal of including all NG9-1-1 capabilities.).

intended to clarify the obligations of providers and the expectations of consumers in the provision of services that a customer would perceive as replacing line-powered telephone service. Mobile wireless services increasingly compete with fixed services, but they function differently in multiple respects. Perhaps most significantly, mobile wireless devices are battery-powered in their normal mode of operation. Thus, we do not believe that consumers would reasonably expect such devices to draw line power during a commercial power failure. Moreover, the battery that powers a mobile device provides an inherent source of "backup power" that is often capable of providing far more than 8 hours of service per charge, and often may be charged through additional means, such as a car charger.

29. Therefore, we conclude that, at this time, the appropriate services that should be subject to backup power requirements for effective 911 service during power outages are facilities-based, fixed voice service that is not line-powered by the providers, and is offered as a residential service.

C. Responsibilities of Providers of Covered Services

30. To promote clear expectations and customer choice, we adopt a combination of performance and disclosure requirements to empower consumers to understand the backup power options available to maintain continuity of 911 service and to obtain the equipment necessary to provide such service, if they wish, at the point of sale. Providers of covered services must offer at least one technical solution capable of supporting at least 8 hours of uninterrupted 911 service and install such equipment, at the subscriber's option and expense, as part its installation of service. Within three years, providers of covered services also must offer new subscribers at the point of sale and install, at the subscriber's option and expense, a 24-hour backup power solution if a subscriber desires additional protection. We also adopt a disclosure requirement designed to ensure that both current and new subscribers understand their options with respect to backup power and are aware of the consequences of their decisions whether, and to what extent, to purchase backup power. Finally, we encourage providers of covered services to engage in targeted outreach to the communities they serve to ensure that local emergency managers are aware of the limitations inherent in various fixed, residential voice service technologies commonly used in their areas, as well as backup power options for individuals and communities more broadly to maintain continuity of communications in an emergency.

1. Performance Requirements

a. Duration

31. We adopt backup power requirements that offer consumers meaningful alternatives to address their individualized needs, recognizing that consumers may have different preferences for backup power. Comments in response to the *Notice* confirm that "a one-size fits all solution is inappropriate and would disserve customer interests."[66] Accordingly, we adopt a phased-in approach that will provide consumers with multiple options. As an initial baseline, we will require providers of covered services to offer, at the point of sale, to install a technical solution capable of supporting at least 8 hours of uninterrupted 911 service during a power outage. Within three years, providers must also offer, at the point of sale, a technical solution capable of supporting 24 hours of uninterrupted 911 service if the subscriber desires additional backup power. To minimize costs and provide flexibility, we do not specify the means by which providers of covered services offer to supply these amounts of backup power; instead, providers are free to develop individual technical solutions.[67] To plan for longer power outages, we strongly encourage providers to inform subscribers of options to extend such uninterrupted service

[66] Hawaiian Telcom Reply at 4.

[67] Examples include backup batteries housed within equipment, spare batteries that may be maintained with separate chargers, uninterruptible power supplies (UPS), or a combination thereof, resulting in ability to maintain continuity of 911 communications for 8 or 24 hours. Providers are not required to research and/or provide information on every possible backup power source that could potentially be compatible with a Covered Service; however, they must offer new subscribers at least one backup power option for each duration specified in our rules.

over multiple days and direct subscribers to sources of known compatible accessories such as home, car, or solar chargers. For longer power outages, we do not require providers to offer or install any particular solution, but we strongly encourage providers to inform subscribers at the point of sale, and through annual disclosures to existing and new subscribers discussed below,[68] about known options to ensure uninterrupted 911 service and provide examples of retail sources for associated equipment, which may include third-party vendor sources if providers do not offer such equipment themselves.[69]

32. In the *Notice*, we observed that 8 hours of backup power for network equipment at the subscriber premises appears to be consistent with a number of VoIP deployment models already in practice, though some providers have deployed backup power capabilities for up to 24 hours.[70] We find that 8 hours of backup power is the appropriate amount of time to afford consumers with continuity of power in the critical hours immediately after a power outage, and is a backup power duration that is technically feasible today. The record reflects that the option to receive 8 hours of backup power is already an industry norm, as well as a reasonable baseline for the amount of standby time that is likely to be useful to consumers during emergencies.[71] The United States Telecom Association (US Telecom), for example, states that "provisioning eight hours of backup power is consistent with industry standards and reflects what VoIP providers currently employ."[72] Verizon offers subscribers a 12-volt battery that provides up to 8 hours of backup for voice services and also observes that "[c]ompanies such as Comcast, Cablevision, and Cox offer a battery with eight hours of backup, and Time Warner offers a battery with a choice of eight or twelve hours."[73] The Electronic Security Association (ESA) and the Alarm Industry Communications Committee (AICC) urge the Commission to promote adherence to the National Fire Protection Association (NFPA) minimum standard on battery backup, which also is 8 hours.[74] In light of this broad consensus, and based on the fact that 8 hours of backup power is already being provisioned today by some providers, we disagree with commenters who suggest that 8 hours is not an appropriate standard for backup power offerings.[75] We find that it is technically feasible for providers of covered services to offer subscribers the option of at least 8 hours of backup power through provider-supplied backup power equipment or by offering compatible third-party equipment. While many providers already offer their subscribers an 8-hour backup power capability, the rule we adopt today establishes a common baseline that will ensure that consumers have access to backup power options regardless of their provider. This will promote public safety and emergency preparedness by allowing subscribers to reach 911 and receive telephone-based alerts and warnings[76] in the critical hours immediately following a commercial

[68] *See infra* Section III.C.2.

[69] For example, providers might direct customers to sources of compatible accessories such as home, car, or solar chargers, or provide information about mobile charging stations deployed during emergencies.

[70] *Notice*, 29 FCC Rcd at 14988, para. 35.

[71] *See* PA PUC Comments at 9 (observing that "backup power that is capable of powering CPE for a minimum of at least eight hours during a commercial power outage is consistent with the Commission's enunciated proposal" and that "eight hours appear to be consistent with certain VoIP deployment models already in practice, such as Verizon's FiOS service").

[72] United States Telecom Association (USTelecom) Comments at 5.

[73] Verizon Comments at 18.

[74] ESA Comments at 2; AICC Comments at 4-5. *See also* USTelecom Comments at 5 ("NFPA is the 'leading advocate of fire prevention and an authoritative source on public safety,' and its adoption of an eight-hour industry standard for battery backup demonstrates its suitability for addressing public safety concerns.").

[75] *See* Hawaiian Telcom Reply at 4 (arguing that "[t]he predominant length of power outages is four hours or less" and that "[a] fixed minimum duration requirement for voluntarily provided CPE back-up power, such as eight hours, is not realistic for most providers").

power failure.[77] We emphasize that the requirements we adopt today do not place any obligation on the consumer to purchase backup power; the obligation is placed on the provider not providing line-powered service, to make backup power available to the consumer, and to install appropriate backup power upon initial installation of service if requested by the consumer. To that end, we expect that installers should be able to answer questions about backup power.

33. While we believe that 8 hours of backup power would address the need for continuity of communications immediately after a power outage, we recognize that, in some cases, 8 hours of backup power may not be enough for subscribers to reach critical emergency services during an extended loss of power.[78] AARP urges the Commission to require providers to be "responsible for the deployment and maintenance of voice-enabling CPE that delivers at least 12 hours of standby time."[79] NASUCA and the Communications Workers of America (CWA) also suggest that a longer time period, such as 12 or 24 hours, would be more useful for subscribers who need a longer duration to attend to other time sensitive matters that arise during the course of a natural disaster or other emergency.[80] While industry commenters oppose a mandate to provide more than 8 hours of backup power to every subscriber,[81] service providers note existing solutions, as well as innovative new solutions, that are capable of supporting longer standby times.[82] Along similar lines, NASUCA urges the Commission to monitor advances in battery technology, and as soon as such technology is available at a reasonable cost, to require providers to furnish backup batteries with 7-day standby time and 24-hour talk time.[83]

34. In light of the critical need for maintaining 911 service during more severe and long-lasting power failures, we will require providers to offer subscribers a 24-hour backup power solution within three years. The record indicates that the provision of 24 hours of backup power is at least technically feasible today. ACA has "determined that batteries with 24 hour stand by capability can be ordered from at least one vendor but are not immediately available because they are not widely used."[84] As explained below, we do not require providers to offer technologically distinct 8-hour and 24-hour solutions, so a 24-hour solution could consist simply of three 8-hour batteries.[85] Many providers that offer an 8-hour solution are therefore likely to be capable of offering a 24-hour solution with minimal

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[76] *See* Rural Broadband Policy Group Ex Parte, May 16, 2015, at 3 (discussing the importance of Reverse 911 calls to warn residents and issue evacuation orders in an area affected by a wildfire); Public Knowledge *et al.* Comments at 18 ("New networks should also be able to support Reverse 911 functions, which in urban areas can typically support 5,000 30-second calls in less than 10 minutes.").

[77] *See* ESA Comments at 2 ("Not only is standby power for communications important for life safety systems, but it is also critical in allowing the consumer to dial 911 during these outages.").

[78] For example, NASNA argues that "[t]wenty-four hours would be more useful and account for the fact that in the midst of a power outage due to a natural disaster or other emergency will likely have urgent communication needs that may take time to accomplish." NASNA Comments at 2.

[79] AARP Reply Comments at 3.

[80] NASUCA Comments at 9-10; CWA Reply at 2.

[81] *See* USTelecom Comments at 5 ("Any obligation greater than eight hours runs the risk of imposing onerous and unnecessary burdens on providers for provisioning backup power during emergencies, while at the same time diminishing the important role of consumers in individually preparing for emergencies.").

[82] Verizon, for example, states that it is "rolling out a new approach that uses standard D-Cell batteries that are more readily available and replaceable than 12-volt batteries and that provides backup power for up to 24 hours (which can easily be extended by customers)." Verizon Comments at 18.

[83] NASUCA Reply at 13.

[84] ACA June 24, 2015 Ex Parte at 3.

[85] *See infra* Sec. III.C.1.b

additional difficulty. That said, we want to encourage continued innovation in the development of 24-hour and longer term backup power solutions and avoid locking in solutions that are minimally compliant but that may not provide the best value to consumers. We will therefore phase-in the 24-hour requirement over three years, during which time we expect providers to work diligently to implement innovative solutions for providing at least 24 hours of backup power that improve upon current offerings in terms of cost, reliability and ease of use. This is consistent with ACA's recommendation for a phase-in of the 24-hour battery requirement for smaller providers;[86] however, we find that given the overall market conditions for 24-hour battery supplies, including questions about immediate availability, it is appropriate to phase in the requirements for all providers, regardless of size.[87] While NASUCA recommends that the Commission monitor battery backup power developments and phase in the requirements as soon as the market will allow, we find that providing a date certain both allows the market sufficient time to develop, and places a backstop for development, thereby spurring innovation in a reasonable timeframe. In the meantime, we encourage but do not require providers to offer a 24-hour solution using available technologies.

35. As commenters note, the need for continued access to 911 during an extended power outage does not end after 8, or even 24, hours. For example, Public Knowledge argues that "a minimum time of seven days backup power is a reasonable requirement that will keep consumers safe before, during, and after a natural disaster, and allow them to rebuild their communities."[88] Based on a study by the Environmental and Energy Study Institute, Public Knowledge observes that restoring power after Hurricane Sandy and Hurricane Katrina took 12 and 15 days respectively, and on average takes 7 to 23 days.[89] To address such extended losses of commercial power Public Knowledge asserts that "carriers must prioritize the adoption of devices that use batteries that can last days and are not proprietary."[90] Other commenters argue that "Americans have come to trust and expect basic telephone service to work indefinitely, particularly during power outages caused by natural disasters and public safety emergencies" and urge us to adopt even longer backup power requirements, ranging from seven days to two weeks.[91]

36. We are not persuaded that a requirement for providers of covered services to offer or install more than 24 hours of backup power is necessary at this time. All things equal, we would prefer access to 911 during a loss of commercial power to last indefinitely, as consumers have come to expect

[86] ACA June 24, 2015 Ex Parte at 3. ("ACA therefore has no problem with adopting this mandate provided there is a sufficient transition, especially for smaller operators, to obtain both batteries with 24 hour stand by time and devices that can accommodate either a 24 hour battery or multiple batteries that in aggregate enable 24 hour stand by time.").

[87] *See* AT&T Comments at 14 ("If the Commission nonetheless decides that the record in this proceeding supports the imposition of backup-power standards, it should give providers and equipment manufacturers sufficient time to redesign and replace any affected CPE.").

[88] Public Knowledge, *et al.* Comments at 9-10, 25-26 (citing a study of the Environmental and Energy Study Institute that, based on evidence regarding long-term power outages after large-scale extreme weather events, recommends a CPE backup system that lasts a minimum of 10 days, and perhaps longer in "communities that are particularly reliant on landline service, or experience more frequent outages than average.").

[89] *Id.* at 10.

[90] *Id.* at 27.

[91] *See* Rural Broadband Policy Group (RBPG) Ex Parte, May 16, 2015, at 5 ("[A] telephone carrier that chooses to use a technology that does not carry its own electricity must make necessary arrangements to ensure a minimum of seven days or an ideal of two weeks worth of backup power during commercial outages."); Appalshop Comments at 2 ("[A] telephone carrier interested in changing the technology it uses to provide basic telephone service must make necessary arrangements to ensure two weeks worth of backup power during outages."); Sue Wilson Comments at 4 (arguing that the ability of basic telephone service to function during power outages "is an invaluable characteristic of the old telephone network" and that providers of new technologies should be required "to ensure two weeks worth of backup power during outages").

with line-powered services. We recognize, however, that there are technical, operational, and cost considerations that must be balanced against this theoretical desire. For reasons discussed above, we believe that it is both technically feasible and consistent with current business models for covered services to require providers to offer options for 8 and 24 hours of backup power on the timelines specified in our rules. We agree, however, with commenters who suggest that a mandate to offer backup power for multi-day outages could impose unnecessary burdens on service providers and excessive costs on consumers for comparatively little public safety benefit.[92] As CSRIC has observed, backup power technologies are evolving, and the cost of more advanced batteries such as lithium-ion cells is likely to decrease over time as other options such as power-over-Ethernet become more widespread.[93] We will continue to monitor these developments to ensure that our rules keep pace. Moreover, power outages of extended duration allow well-informed consumers time to recharge their existing batteries or make other arrangements to reach emergency assistance until power is restored.[94] We therefore strongly encourage providers to inform subscribers, both at the point of sale and annually thereafter, of known ways consumers can maintain connectivity during extended power outages. As an example, this could include guidance on restocking or recharging a power supply used to provide 8- or 24-hour capability. Providers could also give information on purchasing other accessories such as solar, home or car chargers that may allow exhausted batteries to be recharged and that are compatible with the provider's equipment. Providers need not offer such accessories themselves or endorse particular third-party suppliers, but they should provide sufficient information, including technical specifications when necessary, for subscribers to obtain compatible accessories from commercial sources. Such information may be provided through welcome kits, brochures, e-mails to subscribers, or any other means reasonably calculated to reach each subscriber, as discussed below, while providing due consideration for any preference expressed by the customer.[95] Providers sometimes deploy mobile charging stations to areas affected by an extended outage, and may inform subscribers when such mobile charging stations are made available.

37. In adopting these requirements, we acknowledge observations that "[n]otwithstanding the availability of backup batteries, many customers today choose not to obtain a battery, given the growing reliance on wireless or the customers' use of handsets or other devices that themselves require commercial power to operate."[96] We also agree with commenters such as Verizon that "[c]ustomers should be free to decline [a backup] battery, depending on their personal preference."[97] We further acknowledge that comments in the record indicate that, when it is offered, consumers often may not choose to avail themselves of options to purchase backup power.[98] Commenters note, for example, that

[92] *See* USTelecom Comments at 5 (cautioning the Commission against "imposing onerous and unnecessary burdens on providers for provisioning backup power during emergencies").

[93] CSRIC Report at 7, 19.

[94] For example, communities affected by a disaster may set up temporary shelters or heating and cooling centers where residents can obtain first aid and take shelter from severe weather. *See* Press Release, Gov. McDonnell Issues Update on Virginia's Recovery from June's Historic Derecho Storm, July 5, 2012, *available at* http://www.virginiadot.org/newsroom/statewide/2012/gov._mcdonnell_issues_update58750.asp (describing shelters available to Virginia residents during the 2012 derecho storm and noting that "[l]ocalities are opening cooling centers to provide daytime relief from the heat for their citizens").

[95] *See infra* Section III.C.2.

[96] Verizon Comments at 17.

[97] *Id.* at 19.

[98] *See* Bright House Networks Reply at 2 (stating that after Bright House Networks made batteries optional for new installations at approximately $35 plus shipping, "[a] truly negligible number of customers decided to purchase a battery after receiving notice that the service will not function without power"); Letter from Mary McManus, Comcast, to Marlene H. Dortch, Secretary, FCC, GN Docket No.13-5, PS Docket No. 14-174, at 1-2 (filed June 8, 2015) (Comcast *Ex Parte* Letter) (stating that "for the year 2014, less than 1 percent of new Xfinity Voice

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many subscribers of fixed, residential VoIP service also purchase mobile voice service that provides an alternate means of reaching 911 in an emergency, and that others prefer cordless phones that require backup power beyond that supplied by service provider networks.[99] Nevertheless, some consumers – particularly the elderly and other populations that are at the greatest risk during an emergency – may not subscribe to mobile wireless service and may rely solely on the continued functionality of their residential voice service to reach 911.[100] Furthermore, mobile networks are not designed in the same manner as wireline networks and may become overloaded in times of extreme use in an emergency situation, and thus be unavailable for use to reach 911.[101] We emphasize that nothing in our rules forces consumers to purchase backup power they do not want. We require only that consumers who want service that will work during power outages and have not otherwise provided for such uninterrupted service have the option of obtaining that capability, and that they have sufficient information to make an informed decision.

38. In the *Notice*, we discussed the duration of backup power in terms of "the availability of standby backup power, not actual talk time."[102] Commenters differ on whether backup power should be measured in terms of standby time, talk time, or some other metric that takes into account variations in battery life under different conditions. NASUCA, for example, questions provider assertions about backup battery life on the grounds that 8 hours of battery life yields far less actual talk time, and because batteries deteriorate as they age.[103] Public Knowledge observes that the actual duration of a battery depends on its use, and that the more calls are placed, the more quickly backup power is depleted.[104] In light of these potential discrepancies, we believe that adopting a uniform definition of "backup power" is necessary to avoid potential consumer confusion. Therefore, we base our backup power requirements on the amount of time a technical solution can maintain a covered service in standby mode, *i.e.*, able to provide a dial tone and to initiate and receive voice calls, but not necessarily in continuous use. We believe that standby time is an appropriate metric, because our rules are premised on the need for covered services to be available to dial 911 or receive incoming communications such as emergency alerts and warnings during emergencies, not necessarily on the need for extended talk time when commercial power fails. We recognize that actual battery life may vary depending on how often subscribers place calls and how long such calls last, but we conclude it would not be practical to account for such situation-specific variations in our rules and that standby time is a more consistent and useful point of comparison. Accordingly, we require providers of covered services to offer subscribers the option to obtain backup power for 8 hours (effective 120 days after publication of this *Report and Order* in the Federal Register)[105] or 24 hours (effective within three years thereafter) of standby time, measured at rated

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customers purchased a backup battery," and that approximately 13 percent of customers obtained a replacement battery after being notified that their existing battery was depleted).

[99] *See* Public Knowledge Reply at 8 (recognizing "three different levels of backup power – at the carrier's central location, on customer premises, and for the actual phone – that vary depending on the nature of the technology").

[100] *See, e.g., id.* at 6 (urging the Commission not to "creat[e] a network that serves some and not others").

[101] *See, e.g., Improving the Resiliency of Mobile Wireless Communications Networks; Reliability and Continuity of Communications Networks, Including Broadband Technologies*, PS Docket Nos. 13-239 and 11-60, Notice of Proposed Rulemaking, 28 FCC Rcd 14373 (2013).

[102] *See Notice*, 29 FCC Rcd at 14988, para. 35 n. 109.

[103] NASUCA Reply at 9, 10.

[104] Public Knowledge *et al.* Comments at 26.

[105] As noted below, for covered providers with fewer than 100,000 domestic retail subscriber lines, the effective date of this obligation is extended for an additional 180 days. *See infra*, section IV.D.

specifications,[106] without a duration requirement for actual talk time.

b. Methods of Provisioning Backup Power

39. We agree with commenters who advocate flexibility in how providers achieve continuity of 911 access for the time periods discussed above. The record reflects that providers currently employ a variety of backup power technologies and that a range of backup power options are also available direct-to-consumer from third-party sources. CSRIC, for example, identifies nine "use cases" for residential VoIP deployment, with a range of equipment functioning as an analog telephone adaptor (ATA) with varying levels of battery backup.[107] CSRIC observes that "[t]he most commonly deployed model for VoIP services in the United States is to locate the ATA function in a network device, installed inside the living unit."[108] In addition, as NCTA states, uninterruptible power supplies (UPS) that can power multiple devices during a power outage are already widely available at national retailers.[109] Bright House also describes "numerous retail options available to subscribers like UPS, portable power packs, solar, and manual cranks that power multiple devices during an outage and offer a more compelling and flexible solution to subscribers at comparable prices"[110] Some parties also comment that subscribers who use more versatile power options such as UPS should not have to also pay for the duplicative cost of an additional limited-function battery; nor should the Commission require consumers to pay for a backup power option that does not work in their situation.[111]

40. We do not require use of a specific technical solution or combination of solutions. Providers, which are not providing line-powered service, have flexibility to develop and offer their own backup power solutions, as long as those solutions comply with the rules we adopt today. In addition, we expect that installers should be able to answer questions about backup power. For example, a provider could offer a solution with a single, internal battery delivering 8 hours of backup power. With respect to the 24-hour option required within three years, providers may choose to offer consumers a single 24-hour battery (or battery tray as offered by Verizon),[112] three 8-hour batteries, or some other combination of installed and spare batteries, UPS systems or other technologies to provide 24 hours total. If the solution requires a proprietary battery or other equipment that is not widely available in retail stores, the equipment should be provided as part of the installation of service. If, however, the solution accepts commonly available equipment such as D-Cell batteries, providers need not supply such equipment themselves, as long as they notify subscribers at the point of sale that it is not included and must be

[106] We also seek to avoid the potential for confusion in measuring actual battery life under a wide variety of operating conditions. Therefore, we measure the duration of backup power offerings in terms of rated specifications, *i.e.*, the typical electrical load and the volt-ampere or wattage rating.

[107] CSRIC Report at 7-18.

[108] *Id.* at 8. The CSRIC report also discusses other technologies, such as Radio Frequency over Glass (RFoG) architecture used by cable operators, in which an RFoG micro node (R-ONU) terminates the fiber connection at the edge of the premises but passes VoIP traffic to an embedded multimedia terminal adapter (eMTA) device with an internal ATA. *Id.* at 10. Fiber-to-the-Home (FTTH) systems may also incorporate an outdoor-mounted device known as an optical network unit or terminal (ONU/ONT) powered by a UPS or wall transformer. *Id.* at 10. We note that the CSRIC report also considers additional use cases beyond the scope of this *Report and Order*, such as Digital Enhanced Cordless Telecommunications (DECT) cordless phones that connect to the network via a standard analog POTS interface in a base station powered by an AC/DC transformer with no battery backup. *See id.* at 15. Our rules here are focused on the backup power required for a service to continue to provide 911 functionality during a loss of commercial power, not on the end-user equipment that subscribers choose to connect to the network.

[109] NCTA Comments at 2.

[110] Letter from Thomas M. Wilson, Counsel to Bright House Networks, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5, PS Docket No. 14-174, at 1 (filed May 26, 2015) (Bright House *Ex Parte* Letter), at 1.

[111] Bright House Networks Reply at 3. *See also* Century Link Reply at 40, and Hawaiian Telcom, Inc. Reply at 4.

[112] Verizon Comments at 18.

supplied by the subscriber for the solution to function properly.[113] In cases involving spare batteries that are not widely available at retail stores, the solution offered to subscribers should also include a charger or some other method of ensuring that such batteries are stored in a charged state.[114]

c. Battery Monitoring and Maintenance

41. In the *Notice*, we sought comment on whether the provider should have any responsibility to monitor backup power status to determine whether the battery had degraded run time or performance.[115] Generally, the comments of individual consumers and consumer advocacy organizations support requiring providers either to maintain and monitor the backup power or to provide subscribers with the means to do such monitoring. For example, AARP urges the Commission to adopt as a rule the CSRIC recommendation that service providers work with their vendors to provide a mechanism to monitor battery status, and determine whether the battery is degraded.[116] AARP states that this can be done through remote monitoring of batteries as part of the service offered to subscribers, or through LEDs visible to subscribers.[117] Other commenters suggest that the backup power system contain a self-monitoring feature that notifies subscribers audibly and visually when the backup power system is in use, and when it is running low.[118] ESA notes, however, that some subscribers may not pay attention to these warnings, and that it may require personal interaction with subscribers to assist with upgrading or changing a battery that needs attention.[119] On the other hand, service providers generally argue that requiring remote monitoring of backup power is either impractical with current technology[120] or, even if technically feasible, of limited use to subscribers or providers.[121] AT&T contends that "IP-based voice service providers generally do not assume responsibility for monitoring their customers' backup batteries," and that "[r]elying on customers, rather than service providers, to monitor and maintain battery backup power for network equipment at the subscriber premises makes eminent sense given technological and marketplace changes."[122]

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[113] We do, however, require providers to assist with the installation of customer-supplied batteries such as D-Cells to the extent that subscribers obtain and make such batteries available when service is installed.

[114] For example, a provider could offer a backup power system using standard D-Cell batteries without including a supplemental charger because such batteries are widely available at local retailers. A solution based on less widely available batteries such as sealed lead-acid or lithium-ion cells should include a charger to ensure that spare batteries are maintained in a charged state.

[115] *Notice*, 29 FCC Rcd at 14989, para. 37.

[116] AARP Comments at 23.

[117] AARP Comments at 24 (citing CSRIC Report at 21).

[118] *See, e.g.*, AICC Comments at 6; ESA Comments at 2.

[119] ESA Comments at 2.

[120] *See* Verizon Reply at 11 ("[M]onitoring may not be feasible under systems as currently designed, and requiring such monitoring will require substantial and costly shifts in technology."); (Hawaiian Telcom Reply at 4 ("The provider has no ability to monitor whether a customer's battery is functioning properly."). *Cf.* Comcast Ex Parte, June 8, 2015, at 1 (noting that the price of purchasing backup power for Xfinity Voice service "includes battery monitoring and customer notification when batteries are depleted").

[121] *See* AT&T Comments at 9 ("Requiring service providers to monitor and maintain backup power for CPE would harm, rather than benefit, consumers" and would "impose enormous burdens on service providers that would significantly raise the cost of the service – both to pay for the monitoring itself and to cover any potential liability issues associated with allegations that the provider was negligent in monitoring"); Cincinnati Bell Comments at 10 (arguing that remote battery monitoring technology is not mature, and that tests revealed that many battery alarms were baseless "ghost" alarms the would interfere with the efficient operation of the network operations center).[121]

[122] AT&T Comments at 9; *see also* Cincinnati Bell Comments at 10 ("Rather than imposing this cost on providers and/or consumers . . . consumers who choose to have battery back-up units installed should be responsible for

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42. We do not believe it would serve the public interest to require providers of covered services to remotely monitor backup power status at this time. Similarly, we decline to adopt any requirement that providers inspect or test backup power equipment after fulfilling their initial responsibility under our rules to offer subscribers the option, at the point of sale, for backup power to be installed as part of the initiation of service. This is consistent with CSRIC's observations that "[i]ncreasingly, battery backup is being offered as an optional accessory to the consumer, which they can control and manage themselves."[123] While we believe service providers are in the best position to identify and make available backup power solutions compatible with and appropriately sized for specific covered services, we agree with commenters who believe subscribers are in the best position to monitor backup power once installed, and in light of the disclosure requirements we are implementing designed to ensure they are adequately informed on how to do so.[124] With respect to batteries, we are not persuaded that battery monitoring technology has evolved to the point of allowing service providers to conduct useful remote monitoring of battery status without raising costs to consumers or diverting resources away from more important network reliability issues through an increase in false failure alarms.[125] We observe, however, that our allocation of monitoring responsibility to consumers is based on the expectation that service providers offer adequate information for subscribers to understand when their equipment is functioning properly and when it may require maintenance or replacement. Service providers should also inform subscribers of the potential for batteries to degrade over time and either make replacement batteries available for self-installation at the subscriber's expense or provide sufficient information for subscribers to obtain replacement batteries from third parties.

d. No Obligation to Retrofit

43. Some service providers express concerns about the cost and complexity of any obligation to retrofit currently installed equipment to comply with any backup power requirements the Commission adopts. AT&T, for example, states that "[i]f service providers were required to provide CPE backup power, the Commission should require only prospective implementation in order to avoid the technological pitfalls of retrofitting prior deployments."[126] ITTA argues that "[r]etrofitting existing service deployments for customers who are not interested in battery backup power would divert resources from new deployments, thus slowing the expansion of services to customers who desire advanced broadband capabilities."[127] We agree and decline to adopt any obligation that providers of covered services retrofit currently-deployed equipment to accommodate the amount of backup power specified in our rules for new installations. The record reflects that some covered services are currently deployed without backup power[128] and that consumers may prefer to continue using their existing equipment.[129]

(Continued from previous page)
checking and replacing their own batteries, just like they do with batteries for their fire/smoke alarms and other consumer devices.").

[123] CSRIC Report at 3,6.

[124] *See, e.g.*, AT&T Comments at 9; Verizon Reply at 11.

[125] *See* Cincinnati Bell Comments at 10.

[126] AT&T Reply at 11.

[127] Letter from Micah M. Caldwell Vice President, Regulatory Affairs, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5, PS Docket No. 14-174, at 2 (filed Apr. 30, 2015) (ITTA *Ex Parte* Letter).

[128] *See* Hughes Network Systems Reply at 3 (noting that "satellite terminals . . . require more power than electronics using alkaline batteries, due to the satellite terminal having to supply power for transmitting to and receiving from a satellite").

[129] *See* Bright House Networks Reply at 3 (arguing that "[c]onsumers should have a right to choose to use VoIP modems that do not include backup batteries" and that "a battery mandate would increase the number of useless backup batteries that will end up stranded in multifunction devices that consumers keep for their other services").

Accordingly, we require only that backup power options be offered at the point of sale.[130] Providers may continue offering retrofit options for backup power upgrades to existing customers or those who decline the option at the point of sale, but they are under no obligation to do so. We note, however, that even service providers that do not currently offer backup power acknowledge that third-party UPS units may allow subscribers to maintain communications capabilities without the need to retrofit existing equipment.[131] Therefore, we conclude that providers' obligations to current subscribers should include the disclosure requirements discussed below and the option for subscribers to self-install commercially available backup power solutions that are compatible with existing equipment.[132]

e. Compensation and Costs for Providing Backup Power

44. In the *Notice*, we proposed that any requirement for service providers to ensure a substitute for line power would be premised on the condition that such providers "would be entitled to commercially reasonable compensation in exchange for providing this service."[133] In response, Public Knowledge asserts that the Commission should use legacy POTS as a baseline and require providers to furnish backup power without an additional fee because, until the transition to IP-based services, reliability has always been paid for as part of a subscriber's phone bill, and allowing providers to charge for backup power for the same service via new technology would be a step backward.[134] However, this argument disregards the record evidence that batteries or other potential substitutes for line powering carry a not insignificant additional cost over an entire network, and that it is not unreasonable to permit providers to recoup those additional costs from those subscribers who have need for the additional coverage. We also note that it is current practice among many interconnected VoIP providers to charge an extra fee for batteries or other backup power capabilities, suggesting that the expectations Public Knowledge cites may be changing as consumers increasingly adopt VoIP services.[135] As CSRIC has observed, "[o]ne clear trend across all VoIP use cases is that battery backup is increasingly being offered as an option to the consumer, with the cost and maintenance of the UPS and batteries being the consumer's responsibility."[136] Ultimately, we are persuaded that subscribers should not have to pay for backup power they do not want.[137] As discussed above, consumers may desire different amounts of backup power – or none at all – depending on their individual circumstances.

45. Accordingly, we conclude that providers of covered services may charge subscribers for the backup power capabilities provided under our rules, if subscribers wish to purchase such capabilities.

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[130] We define the "point of sale" in functional terms as the transaction between a service provider (or its agent) and a subscriber in which the subscriber requests, and commits to purchasing, a covered service. This may occur by telephone, online, or in person at a retail location. The offer of backup power required under our rules must be made as part of this transaction, regardless of when equipment is actually installed at a subscriber's home or when the subscriber is ultimately billed for such equipment.

[131] *See* Hughes Network Systems Reply at 3 (stating that an external UPS in the range of 3000 volt-ampere-hours (VAh) would provide 8 hours of standby time for a satellite service).

[132] *See* infra Section III.C.2.

[133] *Notice*, 29 FCC Rcd at 14988, ¶ 35 n.109.

[134] Public Knowledge Reply at 7.

[135] *See, e.g.*, Bright House Networks Reply at 2 (noting that, in 2014, Bright House began offering batteries as an option for new installations, and making them available for purchase for approximately $35 plus shipping); Comcast *Ex Parte* Letter, June 8, 2015, at 1 ("New Xfinity Voice customers have the option of purchasing a backup battery for their Comcast voice modem for $35.00 plus $5.95 for shipping and handling. The price includes battery monitoring and customer notification when batteries are depleted.").

[136] CSRIC Report at 3, 6.

[137] *See* Verizon Comments at 19; Bright House Networks Reply at 3; CenturyLink Reply at 40; Hawaiian Telcom, Reply at 4.

We emphasize that we do not specify the rates at which providers of covered services may offer backup power or related accessories, we expect market forces to ensure that backup power is offered at competitive prices. A service provider can receive compensation for all aspects of implementing the rules we adopt today, including the backup power installation, and costs of equipment and labor, from the consumer that elects to have backup power installed. And we do not preclude service providers from including backup power capabilities without separate charge, if they choose to do so for competitive or other reasons.

46. By requiring only that service providers provision backup power upon subscriber request at point of sale, and at the requesting subscriber's expense, we have effectively negated the argument that these rules will substantially increase costs to providers. The majority of commenters who raise issues related to costs base their arguments on the assumption that the Commission would mandate a universal backup power solution across all subscribers, including retrofitting existing subscribers.[138] The action we take today will substantially limit the providers' costs by requiring backup power installations only for customers that request backup power at the point of sale, and at those customers' expense. Fiber to the Home Council Americas states that "while the industry has generally supplied backup batteries to all subscribers, it would make a material difference to the cost of a build, enabling expansion into less dense areas, if it could supply battery backup only to those subscribers that expressly want it –a number all-fiber service providers has determined is not great."[139] Similarly, NCTA stated that in their experience only a small number of customers have purchased backup power.[140] We also find concerns about the environmental effects of requiring all consumers to obtain backup power are inapplicable because we do not make such a requirement.[141]

47. There are additional factors that minimize the costs associated with compliance for the covered providers. First, as noted previously, the record indicates that numerous entities comprising a significant share of the IP voice services market are already offering their customers 8 hours of backup power; for those entities no additional costs are necessary.[142] To the extent that a service provider is not currently offering the requisite 8 hours of backup power, the fact that numerous providers are currently offering such a solution indicates that solutions exist and are widely available. Accordingly, there is little need to custom-design a solution when many of the solutions can be used universally. Indeed, providers may avoid the costs of supplying or installing a proprietary solution. This also saves providers the costs of supplying batteries directly. The same cost-mitigating principles apply to the discussion of 24-hour and extended duration backup power; the commercial market for this solution already exists and even the smaller providers are confident in their ability to provide this level of backup power if provided ample transition.[143] The record also indicates that many providers already offer some form of backup power, even if it is not an 8-hour solution, and therefore would be familiar with the practice of installing backup power solutions for their customers.[144] Because the cost to providers of complying with this rule should

[138] *See* ACA Comments at 13-14; Cincinnati Bell Comments at 8; Letter from Thomas Cohen, Counsel to FTTH Council, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5, PS Docket No. 14-174, at 3 (filed May 7, 2015) (FTTH Council May 7, 2015 *Ex Parte* Letter); ITTA April 30 *Ex Parte* Letter at 2; Letter from Steven F. Morris, NCTA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-5, PS Docket No. 14-174, at 2 (filed May 18, 2015) (NCTA *Ex Parte* Letter); NCTA May 18, 2015 Ex Parte at 2. Some parties raised costs associated with one technical solution over another but our rules for backup power solutions are technology neutral. *See* Alarm Industry Communication Committee Comments at 7.

[139] FTTH Council *Ex Parte* Letter at 2.

[140] NCTA *Ex Parte* Letter at 2.

[141] *See* Bright House Network Reply at 2-3.

[142] *See supra* Section III.C.1.a.

[143] ACA June 25, 2015 Ex Parte at 3.

[144] *Id.*

be minimal both at the outset as well as when the 24-hour requirement takes effect, and the particular benefit to the public of enhanced continuity of communications to reach help through 911 during power outages is substantial, we conclude that our action today produces a net public benefit.

2. Subscriber Disclosure Obligations

a. Need for Subscriber Disclosure Obligations

48. In the *Notice*, we sought comment on whether we should require providers to develop and implement consumer education plans regarding the availability of backup power,[145] and noted our belief that such plans "would be critical to consumers' ability to successfully self-provision."[146]

[145] *Notice*, 29 FCC Rcd at 14990, para. 39.

[146] *Id.*

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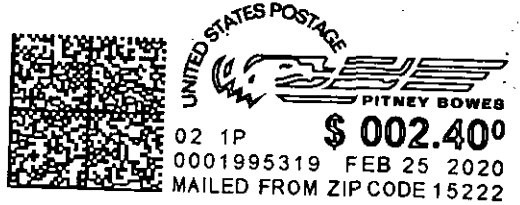

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