

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

In the Matter of)	
)	
Improving the Resiliency of Mobile Wireless Communications Networks)	PS Docket No. 13-239
)	
Reliability and Continuity of Communications Networks, Including Broadband Technologies)	PS Docket No. 11-60
)	

Comments of AARP

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Introduction

AARP respectfully submits these Comments for the FCC’s consideration, and thanks the Commission for the opportunity to participate in this important proceeding regarding the transition to broadband networks. AARP is keenly interested in this technology transition. Telecommunications technologies play a growing role in the lives of older Americans, i.e., those in age 50 and above households. The notice raises issues that are of growing importance for older Americans—the resiliency and reliability of wireless telecommunications networks.

AARP is optimistic that fixed and mobility broadband networks will enable new applications and services, including new methods of delivering healthcare and support for independent living. However, AARP is equally concerned that the usefulness of those new services will ultimately be constrained by the reliability of the underlying broadband networks. Today, users of services that ride “over-the-top” of the circuit-switched Public Switched Telecommunications Network (PSTN), such as alarm systems, medical monitoring, and personal safety devices, can count on reliable service delivery, including during periods when grid power may be unavailable. Going forward, the Commission must ensure that next generation broadband networks provide equally reliable service. If broadband networks are unreliable, social costs will be imposed. For example, without reliable broadband networks, calls to emergency service providers may not go through. As noted in the National Broadband Plan, “It is critical that the NG911 (next generation 911) system is developed in a way that most effectively ensures Americans can access 911 systems *anytime and anyplace*.”¹ If the goal of 911 access “anytime and anyplace” is to be achieved, it is critical that wireless network reliability be improved.

¹ National Broadband Plan, Section 16.3, p. 325, emphasis added.

The NPRM raises questions regarding the application of a “smart disclosure” regime to encourage more reliable telecommunications networks.² AARP believes that the availability and distribution of accurate information from reliable sources is an important means to empower consumers. However, as will be discussed in more detail below, the smart disclosure approach alone is not sufficient. In other areas of the economy, such as the airline and automobile industries, information distributed by government that is consistent with smart disclosure principles works hand-in-hand with regulatory standards to protect consumers. Standards provide consumers assurances of minimum product performance, and disclosure further encourages competition and informed consumer choice. As the transition to next-generation broadband networks unfolds, AARP believes that standards for wireless and wireline broadband network performance are needed to deliver foundational levels of service, and that smart disclosure can complement the standards that the Commission establishes, similar to the experience in other industries.

Relationship of this Proceeding to other Dockets and the IP Transition

In its December 12, 2013 *Report and Order* regarding 911 reliability, the Commission imposed standards for circuit diversity, backup power, and network monitoring. Importantly, the Commission required that any “Covered 911 Service Provider”³ provide backup power for at least 24 hours in any central office that serves a 911 call center, known as a Public Safety

² *In the Matter of Improving the Resiliency of Mobile Wireless Communications Networks Reliability and Continuity of Communications Networks, Including Broadband Technologies*, PS Docket No. 13-239 PS Docket No. 11-60 Notice of Proposed Rulemaking, September 27, 2013, ¶2. (Hereinafter, “NPRM”.)

³ A “covered 911 service provider” is defined as “any entity that provides 911, E911, or NG911 capabilities such as call routing, ALI, ANI, or the functional equivalent of those capabilities, directly to a PSAP, statewide default answering point, or appropriate local emergency authority, or that operates one or more central offices that directly serve a PSAP.” *In the Matter of Improving 911 Reliability; Reliability and Continuity of Communications Networks, Including Broadband Technologies*, PS Docket No. 13-75, PS Docket No. 11-60, Report and Order, December 12, 2013, ¶36. (Hereinafter, “911 Reliability Order.”)

Answering Point (PSAP), and provide backup power for at least 72 hours in other “critical” central offices (those that host selective routers).⁴ The scope of the rules contained in the *911 Reliability Order*, however, do not address the reliability of network components that are associated with the *origination* of 911 calls:

This definition (Covered 911 Service Provider) encompasses entities that provide capabilities to route 911 calls and associated data such as ALI and ANI to the appropriate PSAP, *but not entities that merely provide the capability for customers to originate 911 calls.*⁵

Thus, the *911 Reliability Order* leaves the overwhelming majority of central offices in the nation—72 percent—without Commission rules for backup power.⁶ The *911 Reliability Order* goes on to explain that the Commission is addressing these broader issues in *this proceeding*:

We focus on network connectivity to PSAPs rather than on call origination in this Report and Order because the derecho and other events have shown that failure of critical infrastructure involved in routing and delivering 911 calls and ALI may cause outages affecting an entire community regardless of the technology or service provider each resident uses to dial 911. *We also note that we are addressing call origination and reliability of other communications services during emergencies in a separate proceeding regarding transparency of performance for wireless networks. See In the Matter of Improving the Resiliency of Mobile Wireless Communications Networks; Reliability and Continuity of Communications Networks, Including Broadband Technologies, PS Docket Nos. 13-239, 11-60, Notice of Proposed Rulemaking, FCC 13-125 (Sept. 27, 2013).*⁷

Thus, the broader issue of call origination and reliability of other aspects of enabling communication through 911 to first responders will be addressed by the Commission in this proceeding, with the apparent focus on wireless networks. Given the focus in the NPRM on the performance of wireless broadband networks, AARP encourages the Commission to also

⁴ *911 Reliability Order*, ¶107. The critical central offices are those that host selective routers.

⁵ *911 Reliability Order*, ¶36, emphasis in the original.

⁶ *911 Reliability Order*, ¶120, footnote 319.

⁷ *911 Reliability Order*, ¶36, footnote 86, emphasis added.

establish a proceeding to address wireline issues. The reliability of wireline broadband networks is equally important for consumers and deserves the Commission's attention.

IP Transition Issues

While the NPRM identifies the improvement of network reliability during emergencies as the primary objective,⁸ it is important not to lose sight of the larger technology transition issues that are also being considered by the Commission, including the potential "experiments" that will be conducted under the supervision of the Commission's Technology Transformation Policy Task Force.⁹ The important question of the general reliability of next-generation networks—wireless and broadband—must not be forgotten as the Commission considers how to improve wireless network reliability during emergency conditions that result in grid-power outages. Consumers face an emergency any time that a network fails and prevents consumers from reaching first responders, or from relying on other vital service providers, such as personal and medical monitoring services or alarm monitoring. Certainly, large-scale outages that rise to the level of the Commission activating its Disaster Information Recovery System (DIRS) are important to consider, due to the number of customers affected and the higher likelihood that 911 calls will need to be made. But the "forest" of reliable next generation networks should not be lost due to a focus on the "trees" of DIRS-outage reporting events.

⁸ NPRM, ¶9.

⁹ See, presentation of the Technology Transitions Policy Task Force, December 12, 2013. http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-324663A1.docx

Smart Disclosure

The NPRM proposes to apply a “smart disclosure” approach to the improvement of the resiliency of wireless networks.¹⁰ AARP is concerned that a smart disclosure regime, by itself, will not lead to levels of next-generation broadband network performance and resiliency that are consistent with the critical mission of public telecommunications networks. The important role of network reliability, whether during emergency conditions, or during “normal” operations, cannot be overstated. As the deployment of next generation wireless and broadband technologies expands, the economic and social fabric of the nation will become increasingly dependent on the ability of consumers and businesses to access next generation networks at all times. A growing variety of critical services that have economic and social benefits are provided over broadband and wireless networks, and the continuity of those services is a key component to the potential economic and social benefits of next generation networks. If the Commission does not take action to ensure that those networks are reliable, in times of emergency and otherwise, the full benefits of broadband technology will not be available to Americans.

Characteristics of an Effective Smart Disclosure Approach

In a May 2013 report, the Task Force on Smart Disclosure described basic components of the approach:

Smart disclosure is the provision of data about consumer products and services, the companies that supply them, or about consumers themselves (personal data). Data about products, services, and companies can generally be made available publicly, while personal data is provided securely and privately to the individual who is the subject of that data or to recipients chosen by the consumer. Smart disclosure usually requires making data “machine readable,” so that information is provided in formats computer programs can analyze, combine, and present in ways that are directly useful to consumers and developers. An increasing array of data-driven products and services are applying

¹⁰ NPRM, ¶21.

the principles of smart disclosure to directly benefit consumers. “Choice engines,” for example, help consumers make informed decisions in the marketplace through platforms such as product-comparison websites, mobile shopping applications, and government information platforms.¹¹

The Task Force on Smart Disclosure placed significant emphasis on the potential for the development of “choice engines”:

Smart disclosure benefits consumers by enabling the creation of Web-based tools and mobile apps that help consumers make smarter choices in the marketplace. For example, entrepreneurs and others have created online and mobile “choice engines”—tools that help consumers make important and difficult choices in sectors such as health care, education, personal finance, energy, transportation, and telecommunications. Choice engines include specialized search engines that consumers can tailor to their own needs, comparison shopping websites, and mobile shopping applications. . . .¹²

However, the Task Force on Smart Disclosure also noted that choice engines work best when based on extensive and diverse sets of information:

In order to be effective, *choice engines need access to large amounts and many types of data and information*. While choice engines have become common in some domains where data are readily available, such as travel, in other domains the options available to consumers are limited. Smart disclosure policies can help expand access to data that private companies and others can use to create a richer array of choice engines for consumers.¹³

With regard to the need for a broad set of data, the Task Force on Smart Disclosure’s Charter also states:

Smart disclosure requires service providers to make data about *the full range of their service offerings* available in machine readable formats such that consumers can then use these data to make informed choices about the goods and services they use.¹⁴

¹¹ Smart Disclosure and Consumer Decision Making: Report of the Task Force on Smart Disclosure, Executive Office of the President, National Science and Technology Council, May 2013, p. 7.

¹² Smart Disclosure and Consumer Decision Making: Report of the Task Force on Smart Disclosure, Executive Office of the President, National Science and Technology Council, May 2013, p. 8.

¹³ Smart Disclosure and Consumer Decision Making: Report of the Task Force on Smart Disclosure, Executive Office of the President, National Science and Technology Council, May 2013, p. 9, emphasis added.

¹⁴ Appendix, “Charter of the Task Force on Smart Disclosure: Information and Efficiency in Consumer Markets

DIRS-Outage Reporting Provides a More Limited Picture

The disclosure approach advanced by the NPRM provides a very limited snapshot of wireless carrier operations—the NPRM proposes the reporting and publication of data in counties where DIRS has been activated, which has been an historically infrequent occurrence.¹⁵ AARP believes a broader reporting than envisioned by the NPRM would more fully inform consumers, thus enabling more effective consumer responses. If consumers are more fully informed, the disclosure mechanism will also create a stronger incentive for carriers to improve network performance.

It is clear that consumers are interested in general network performance.¹⁶ However, AARP believes that consumers would benefit from more comprehensive information on carrier coverage during both “normal” and “emergency” conditions, and on other characteristics of network performance such as call completion, dropped calls, and data throughput rates.

A broader approach to data reporting would also be implemented nationally, not limited to areas where hurricanes and other natural disasters that cause widespread outages are more common. Nationwide data on network coverage and network performance under normal operating conditions, as well as data on performance during natural or man-made disasters would be much more useful to consumers, especially if that data could also be formatted to allow for the

Committee on Technology National Science and Technology Council,” in *Smart Disclosure and Consumer Decision Making: Report of the Task Force on Smart Disclosure*, Executive Office of the President National Science and Technology Council, May 2013.

¹⁵ See, NPRM, Appendix C.

¹⁶ See e.g. crowd source apps such as <http://www.rootmetrics.com/app/> (While the RootMetrics provides information in the spirit of smart disclosure, the crowdsourcing approach results in limited information in many areas. Smaller carriers, and smaller markets do not have much information on the RootMetrics maps. Compare, for example, mapped data for carriers in a market like Columbus, Ohio, where smaller carriers such as Boost, Cricket, and Virgin have very few reports; with larger carriers, like Verizon and AT&T, which have many more reports. See also, a small town, like Athens, Ohio, where there is little data available for any carrier. These gaps in reporting make side-by-side comparisons less meaningful, and point to a role for systematic reporting of information on carrier performance.)

evaluation of network performance in the consumer's local area. While the DIRS-outage recovery information might be one component that could contribute to an overall assessment, it is unlikely to be sufficient in isolation. Furthermore, DIRS-outage events are based on the FCC's discretion,¹⁷ and the events that trigger DIRS are not uniform.

In summary, AARP believes that DIRS-outage information, while most useful to consumers in the affected areas, will not be a sufficiently strong foundation upon which to build a smart disclosure regime. Smart disclosure works best when it involves the publication and dissemination of a more comprehensive information set, as is clear from the experience in other industries.

Mandatory Data Reporting in the Airline Industry results in a Broad Measure of Air Carrier Performance

Looking at the experience of reporting in other industries, the limits of reporting only the DIRS-outage information are apparent. For example, airlines are required to collect data on on-time departures, time on the tarmac, and baggage handling.¹⁸ This information is published by the Bureau of Transportation Statistics.¹⁹ This kind of information is consistent with smart disclosure as it "enable(s) consumers to compare and choose between complex services."²⁰ By reviewing reliable data regarding air carrier performance, consumers can make choices in the marketplace based on accurate data, rather than being required to rely on carrier assertions alone.

¹⁷ <http://transition.fcc.gov/pshs/services/cip/dirs/dirs.html#faq>

¹⁸ See, Code of Federal Regulations, Title 14 - Aeronautics and Space Volume: 4. PART 234 - Airline Service Quality Performance Reports.

¹⁹ See, http://www.rita.dot.gov/bts/data_and_statistics/by_mode/airline_and_airports/airlines_and_airports_passengers_and_freight.html

²⁰ Appendix, "Charter of the Task Force on Smart Disclosure: Information and Efficiency in Consumer Markets Committee on Technology National Science and Technology Council," in *Smart Disclosure and Consumer Decision Making: Report of the Task Force on Smart Disclosure*, Executive Office of the President National Science and Technology Council, May 2013.

If consumers, having been fully informed, are free to vote with their feet and choose among numerous airline alternatives, then airlines which offer low-quality service will be punished with declining sales, which should, in theory, result in a remedial response on the part of the air carrier.

The information disclosure regime associated with the airline industry does not limit the publication of information to air carrier performance associated with adverse conditions. For example, with regard to on-time flights, information on airline performance under *all* conditions is gathered and published:

Each reporting carrier shall file BTS Form 234 “On-Time Flight Performance Report” with the Office of Airline Information on a monthly basis, setting forth the information *for each of its reportable flights held out in the Official Airline Guide (OAG), in the computer reservations systems (CRS), or in other schedule publications.* The reportable flights include, but are not limited to, cancelled flights, mechanically cancelled flights, diverted flights, new flights and wet-leased flights.²¹

Rather than focusing on a subset of flights, the data that is collected reflects *all* flights—those operating under normal conditions, and those operating under adverse conditions. The broad picture of air carrier operations has the potential to provide consumers with useful information as it allows side-by-side comparisons of overall carrier performance, and allows consumers to see what factors have affected overall carrier performance. Consider Figures 2 and 3 below that summarize performance for two air carriers that served Boston Logan airport during October 2013.²²

²¹ 14 CFR, §234.4, Reporting of on-time performance. <http://www.ecfr.gov/cgi-bin/text-idx?SID=10a36993fe3104d441649477d51df99e&node=14:4.0.1.1.21.0.1.4&rgn=div8>

²² Bureau of Transportation Statistics, http://www.transtats.bts.gov/ot_delay/OT_DelayCause1.asp?pn=1

Airline On-Time Statistics and Delay Causes

[Delay Cause Definition](#) [Understand Delay Data](#) [Database Tables](#) [Flight Delays at a Glance](#)

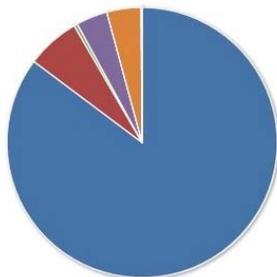
Select a carrier: Select an airport: Period from: Period to:
 Show all reporting carriers Show all airports (by state)

On-Time Arrival Performance American Airlines Inc. (AA) - Boston, MA: Logan International (October, 2013)

[Most Recent Month](#) [Year to Date](#) [View Tabular Version](#) [Download Raw Data](#)

More Topics:

- Flight Delays by Cause
- Weather's Share of Delayed Flights
- Weather's Share of National Aviation System (NAS) Delays
- National Aviation System (NAS) Delay by Cause



- On Time: 85.24%
- Air Carrier Delay: 6.38%
- Weather Delay: 0.42%
- National Aviation System Delay: 3.75%
- Security Delay: 0%
- Aircraft Arriving Late: 4.11%
- Cancelled: 0%
- Diverted: 0.1%

Figure 2: On-Time Departure for American Airlines from Boston Logan, Data from Bureau of Transportation Statistics

Airline On-Time Statistics and Delay Causes

[Delay Cause Definition](#) [Understand Delay Data](#) [Database Tables](#) [Flight Delays at a Glance](#)

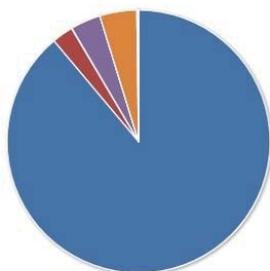
Select a carrier: Select an airport: Period from: Period to:
 Show all reporting carriers Show all airports (by state)

On-Time Arrival Performance JetBlue Airways (B6) - Boston, MA: Logan International (October, 2013)

[Most Recent Month](#) [Year to Date](#) [View Tabular Version](#) [Download Raw Data](#)

More Topics:

- Flight Delays by Cause
- Weather's Share of Delayed Flights
- Weather's Share of National Aviation System (NAS) Delays
- National Aviation System (NAS) Delay by Cause



- On Time: 88.89%
- Air Carrier Delay: 2.61%
- Weather Delay: 0.05%
- National Aviation System Delay: 3.68%
- Security Delay: 0%
- Aircraft Arriving Late: 4.55%
- Cancelled: 0.19%
- Diverted: 0.03%

Figure 3: On-Time Departure for JetBlue from Boston Logan, Data from Bureau of Transportation Statistics

The information in Figures 2 and 3 summarizes the air carriers' performance and reports the overall proportion of on-time departures. The Figures also itemize the causes of delays.

Consumers can evaluate overall performance and note the adverse factors such as “weather delays” that are outside of a carrier’s control occur, versus other events, such as “air carrier delay” or “aircraft arriving late,” that are within a carrier’s control.²³ The FAA data reporting regime, by providing a comprehensive view of carrier on-time performance, is well suited for side-by-side comparisons. Because all flights are included in the reporting information, consumers can gain an understanding of air carrier performance, and the factors that have introduced delays. The NPRM's approach, by limiting wireless carrier reporting to those periods when DIRS has been activated, will result in a very narrow view of wireless carrier performance. The types of events associated with DIRS are infrequent—as noted in the NPRM only nine [9] full activations and six [6] partial activations of DIRS have occurred *since its inception in 2007*.²⁴ The small set of data points limits its usefulness for comparison. The periods in question are the exceptions to carrier performance conditions, and the characteristics of the events triggering DIRS vary widely. DIRS activations have included those associated with hurricanes, ice storms, snow storms, and floods. These events may have differing impact on the performance of wireless networks, and service restoration potential across these events may be very different. For example, floods and snow storms may introduce weather-related obstacles that persist during outage restoration efforts (deep snow, high water) and compound the effects of the initial damage caused by the adverse weather conditions.

While DIRS-outage reporting could provide useful information on one facet of carrier performance, it would be more helpful for consumers to also see comprehensive information on wireless carrier coverage and service availability, dropped and blocked calls, and data throughput

²³ http://aspmhelp.faa.gov/index.php/Types_of_Delay

²⁴ NPRM, Appendix C.

rates presented in an understandable format in the spirit of the information published by the Bureau of Transportation Statistics (as shown in Figures 2 and 3).²⁵ Data showing the performance of a carrier network, with reports available on a regional basis, in addition to overall operations, would be more potent in empowering consumers.

Coverage and Network Performance Data is Known to Wireless Carriers—it should be made Available to Consumers

The NPRM raises the issue of requiring wireless carriers to make available maps that show network service availability, similar to maps utilized by some electric service providers.²⁶ With regard to the NPRM's proposal relating to an electric-utility-style service outage map, AARP believes that such a proposal has merit. Consumers' ability to visualize areas with network outages could provide valuable information regarding carrier performance, and could also provide guidance during outage periods of where service was available, thus enabling consumers' ability to understand that a friend or loved one's location was without service, or to enable the consumer to avoid traveling through areas where the network was not operational. While outage maps would certainly benefit consumers, so would accurate and dynamic coverage maps that report carriers' network performance. Coverage maps that clearly showed carrier performance could be developed from data that is already generated by wireless carriers. That coverage and network performance data is known to carriers is clear from carrier statements:

AT&T technicians and other third-party vendors will drive nearly 30 million miles to test AT&T's wireless network this year — the equivalent of more than 50 round trips to the moon — to ensure AT&T is delivering the best coverage and quality.

²⁵ AARP is not suggesting that the Commission simply copy the Bureau of Transportation Statistics' format, but does suggest that the Commission work with interested parties to develop clear and meaningful depictions of carrier performance that enables side-by-side comparisons and also provides for regional evaluations. Maps would likely play an important role in the presentation of information on wireless carrier performance.

²⁶ NPRM, ¶58.

Hundreds of technicians from third-party testing companies, infrastructure vendors and AT&T technicians will use specially designed vehicles to travel throughout the country and test the signal strength and coverage of AT&T's ALLOVER™ Network.

Along with drive-testing its own network, AT&T drive-tests competitors' networks to ensure that its coverage and quality are equal to or better than other companies providing service in the area.

The drive-test results help to prioritize where the company invests in new cell sites and equipment that enhances the network quality and coverage.²⁷

While AT&T's, and other wireless carriers, drive tests result in mileage-equivalents of "trips to the moon," as far as consumers are concerned, accurate information regarding carrier coverage may as well be on the moon. Access to accurate carrier coverage maps would greatly improve consumers' ability to assess wireless carrier service offerings, and would encourage consumer choice. That this data could be provided to the Commission at low cost is certain as the data is already compiled and analyzed by carriers on an ongoing basis. Arguments made by carriers that drive test information is proprietary and competitively sensitive have little credibility, given that, as AT&T explains, wireless carrier drive tests monitor all wireless carriers, not only their own network. AT&T knows how its rivals' networks are performing, and AT&T's rivals already know how AT&T's network performs.²⁸ Consumers should be allowed to see the same information so as to enable side-by-side comparisons of carrier offerings.

Disclosure and Carriers' Competitive Concerns

As noted above, wireless carriers already know how each other's networks are performing. The NPRM raises the issue of the confidential treatment of NORS and DIRS filings, noting that such treatment may be "inapposite in this proceeding."²⁹ There is no question that secrecy of network outage information will prevent competitors from waging marketing campaigns based on that

²⁷ AT&T Wireless Network Fact Sheet. "AT&T Wireless Network at a Glance," emphasis added. <http://www.att.com/Common/merger/files/pdf/wirelessnetwork/network-glance.pdf>

²⁸ See also a video documenting a Verizon Wireless drive test, that shows that Verizon monitors other carrier network performance (starting at 55 seconds in): <http://www.youtube.com/watch?v=CxM9e2zGjdA>

²⁹ NPRM, ¶52.

data, but the free flow of information is exactly the point of smart disclosure regime. The Commission should not give weight to industry arguments that outage and network performance information must be protected. The NPRM raises the issue of whether revealing network performance information would make networks vulnerable to terrorist attack.³⁰ To the extent that the Commission believes that there is such a risk, it should be addressed through the timeliness of data publication. For example, while the argument might be made that real-time information on storm-related outages could reveal a weakened area of the communications network, the release of service restoration information at some point after the event would not give any advantage to terrorists. Furthermore, as noted in the NPRM, electric utilities already publish maps showing areas subject to power outages.³¹

Competition in Wireless Markets may not be Sufficient to Leverage the Benefits of Smart Disclosure

When consumers have the ability to make choices from among multiple competing providers, access to information plays a critical role in aiding consumer choices, and thus creates a positive feedback loop with regard to product quality. By acting on high quality information, consumers will vote with their feet and punish service providers who fail to deliver the desired level of service quality. This virtuous circle certainly promotes consumer welfare. Smart disclosure has the most potential if consumers are making choices in markets that are subject to competition, and the NPRM appears to be based on the premise that smart disclosure will encourage competition.³² However, beginning with its *14th Report on Competition in the Mobile Wireless Telecommunications Market*, the Commission has failed to find that wireless markets are

³⁰ NPRM, ¶7.

³¹ NPRM, ¶58.

³² NPRM, ¶1.

“effectively competitive.”³³ AARP also notes that recent elimination of Leap/Cricket and MetroPCS as independent operators is unlikely to encourage the development of effective competition. A merger of Sprint and T-Mobile, should that plan gain traction, raises more concerns.³⁴ Given the level of competition apparent in the wireless industry, AARP is concerned that smart disclosure alone will be insufficient to motivate wireless carriers to take actions that are consistent with the public interest. Insufficient competition may contribute to the inertia on the part of firms to improve products in a manner which serves consumers.

As will be discussed in a later section of these comments, standards should be established to ensure that wireless networks can play a reliable role in the “protection of life and property” that is a key element of the Commission’s mission.³⁵

Benefits and Costs

The NPRM discusses the benefits and costs of the smart disclosure proposal.³⁶ The information provided in the NPRM suggests that the benefits associated with the smart disclosure proposal far exceed the costs. AARP believes that the NPRM's discussion of benefits is overly conservative. For example, the NPRM assumes that the result of smart disclosure might be one life saved every five years, and places a value on the life of \$9.1 million.³⁷ However, as noted in a footnote to that discussion in the NPRM, the one life every five years estimate is inspired by a 2002 RAND Journal of Economics study on the

³³ *In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, WT Docket No. 11-186, Sixteenth Report, March 21, 2013, ¶2.

³⁴ "Sprint Working on a Bid for T-Mobile," *Wall Street Journal*, December 13, 2013.

³⁵ NPRM, ¶65.

³⁶ NPRM, ¶¶10-16.

³⁷ NPRM, ¶13.

impact of the adoption of E-911 service on cardiac event survival rates.³⁸ Improved access to emergency services affects much more than cardiac events, and as the NPRM notes, reductions in pain and suffering resulting from enhanced availability of 911 leads to significantly higher benefits.³⁹ Furthermore, as the resiliency of wireless networks contributes to the overall social and economic fabric of the nation, the Commission should anticipate an expansive set of benefits that will arise if service disruptions are reduced. As noted by the Commission in the *911 Reliability Order* “Reliable 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.”⁴⁰

The National Broadband Plan correctly notes that there are negative spillovers arising from unreliable wireless broadband networks. For example, the existing level of reliability associated with wireless broadband networks is insufficient to support applications such as those associated with utility control or “smart grid”:

Commercial data networks are less commonly used for mission-critical control applications, in part because they have historically been unable to ensure service continuity during emergency situations, which is a fundamental requirement for utility control networks. The record indicates that commercial wireless data networks can become congested or may fail completely because of a lack of power backup or path redundancy.⁴¹

Absent reliable wireless broadband networks, either new applications will be delayed, or duplicative private networks may be built.⁴² In either case, avoidable costs arise and should be considered by the Commission. The National Broadband Plan also points out

³⁸ NPRM, ¶13, footnote 31.

³⁹ NPRM, ¶14.

⁴⁰ *911 Reliability Order*, ¶73, emphasis added.

⁴¹ National Broadband Plan, Section 12.1 p. 251.

⁴² A partial list of electric utilities that have selected to rely on private communication networks is available at: <http://www.silverspringnet.com/customers/#.UsckKbQxZxU>

that the economic benefits of a more robust wireless network extend beyond the economic benefits for technologies that can ride over-the-top of wireless broadband networks:

Because 97.8% of Americans are already covered by at least one 3G network, a hardened commercial wireless data network could serve as a core part of the Smart Grid. The benefits of a more reliable commercial broadband network are much broader than enabling the Smart Grid alone. *A more reliable network would also benefit homeland security, public safety, businesses and consumers, who are increasingly dependent on their broadband communications, including their mobile phones. Today, more than 22% of households in America do not subscribe to fixed-line telephone service.*⁴³

Of course, since that time, the number of households that no longer subscribe to fixed-line service has almost doubled to 39.4%, according to data from the National Health Interview Survey.⁴⁴

Reliable broadband networks will generate far-reaching benefits that will strengthen the social and economic fabric of the nation. As noted in Executive Order 12866, the Commission should evaluate “qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider.”⁴⁵ The benefits of reliable wireless broadband networks certainly rise to this level of consideration, and there is no question that many benefits that will be difficult to quantify. There are numerous services that ride over-the-top of broadband networks, and the value of those services is also lost during times of network outages. For example, information processing associated with commerce such as point-of-purchase transaction processing or online ordering suffers during network outages. Similarly, the reduction in risk associated with the continuity of alarm, medical, and personal monitoring services that ride over-the-top of

⁴³ National Broadband Plan, Recommendation 12.1, p. 251, emphasis added.

⁴⁴ Stephen J. Blumberg, Ph.D., and Julian V. Luke, “Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, January–June 2013,” Division of Health Interview Statistics, National Center for Health Statistics, December 2012, p. 1. <http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201312.pdf>

⁴⁵ Executive Order 12866, p. 1. <http://www.archives.gov/federal-register/executive-orders/pdf/12866.pdf>

broadband networks all have positive value. The value of these services is substantial—security alarm services alone are estimated to be a \$17 billion annual market.⁴⁶ Medical monitoring is projected to be an \$8 billion annual market by 2017.⁴⁷ The ultimate potential of these industries in will depend on the quality and reliability of wireless and wireline broadband networks. Quantifying the disbursed, but far-reaching, benefits of reliable broadband networks on the development of technologies that ride over-the-top may be difficult, but acknowledging that the benefits exist is important. While AARP certainly believes that there is a role for benefit/cost analysis when assessing network reliability, or when considering actions that might improve network reliability, AARP urges the Commission to assess the benefits of network reliability broadly, given the critical impact that telecommunications network outages have on the economic life of the nation, as well as personal and national security.

The NPRM indicates that “vague or unsupported assertions regarding costs or benefits generally will receive less weight and be less persuasive than the more specific and supported statements.”⁴⁸ While AARP believes that costs and benefits should be considered, it is important that the Commission keep in mind that the “more specific” cost estimates are likely to be associated with the private costs described by carriers, who have access to their own cost information. However, social costs are more difficult to quantify, and this disparity may contribute to a biased evaluation of costs and benefits. The Commission should not dismiss the consideration of social costs and benefits simply

⁴⁶ “Security Alarm Services in the US: Market Research Report,” *IBISWorld*, September 2013. <http://www.ibisworld.com/industry/default.aspx?indid=1491>

⁴⁷ “Patient monitoring device market to hit \$8B in 2017,” *Mobi Health News*, March 26, 2012. <http://mobihealthnews.com/16747/patient-monitoring-device-market-to-hit-8b-in-2017/>

⁴⁸ NPRM ¶10.

because they are more difficult to quantify. As Executive Order 13563 explained, when considering regulatory options the Commission should:

propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (*recognizing that some benefits and costs are difficult to quantify*); . . . and select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (*including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity*). . . .⁴⁹

There is no question that the public health and safety benefits of reliable telecommunications networks are substantial, and the Commission should give substantial weight to the importance of service availability in its consideration of network reliability, both during times of emergency, and during normal conditions. As will be discussed further below, developing quality standards for wireless broadband networks, as well as developing a comprehensive smart disclosure regime, will contribute to higher levels of network performance, and provide widespread economic and social benefits.

Disclosure Alone is Insufficient to Ensure Reliable Networks—Standards are Appropriate

As noted by the Commission in its recent *911 Reliability Order*, when it comes to the performance of vital telecommunications services, a voluntary approach is not sufficient:⁵⁰

Comments from PSAPs, government entities, and public safety groups validate our concerns that the status quo is unacceptable and *unlikely to improve adequately through voluntary measures alone*. The National Emergency Number Association (NENA), for example, states that ‘the long-established practice of deferring to carriers’ and system service-providers’ assurances with respect to voluntary implementation of ‘best practices’ has not produced the intended outcome.’ The Association of Public-Safety Communications Officials (APCO) agrees that a voluntary approach “has proven inadequate.” Fairfax County, Virginia – one of the jurisdictions hardest-hit by the derecho and one of the largest and most sophisticated PSAPs in the country – has

⁴⁹ Executive Order 13563, p. 1, emphasis added. <http://www.gpo.gov/fdsys/pkg/FR-2011-01-21/pdf/2011-1385.pdf>

⁵⁰ The NPRM also requests comments on the use of voluntary industry measures (¶63).

concluded based on its experience that “[r]elying solely on voluntary compliance does not work.”⁵¹

Given that making a wireless 911 call requires that cell sites are capable of carrying a call, the reliability of emergency access systems is equally compromised due to the lack of sufficient backup power at cell sites, or at the wireless carrier switching centers that serve the cell sites. For the same reason that the Commission recently found that backup power is needed at some “critical” central offices, it is also needed at the points in the network that feed calls to those central offices, including cell sites and “non-critical” central offices.

Consumers Union Identified Standards as a Key Element of the Path Forward

The NPRM raises Consumers Union’s proposal to “set a schedule for phasing in improved performance standards as rapidly as possible.”⁵² AARP believes that standards are an essential component of ensuring that the full potential of next generation networks is reached, and smart disclosure and standards can work hand-in-hand to deliver benefits to the public. AARP agrees with the Commission’s recent observations, made with regard to the performance of 911 services:

In light of these concerns and the preventable 911 outages discussed above, we are not persuaded by service providers’ arguments that “the Commission may not need to take any formal regulatory action at this time.” The avoidable 911 failures during the derecho were not for a lack of guidance from industry or from the Commission. Relevant best practices regarding circuit diversity, backup power, and network monitoring were widely available, but multiple service providers failed to implement them effectively, with serious consequences to public safety. Our conclusion, based on outage reports and the experiences in the derecho, and that of affected PSAPs, is that the discharge of our

⁵¹ In the Matter of Improving 911 Reliability; Reliability and Continuity of Communications Networks, Including Broadband Technologies, PS Docket No. 13-75, PS Docket No. 11-60, Report and Order December 12, 2013, ¶27, emphasis added.

⁵² NPRM, ¶61, quoting the May 2, 2013 letter from George P. Slover, Consumers Union, to Chairman Julius Genachowski, et al., Federal Communications Commission (filed by the Public Safety and Homeland Security Bureau in PS Docket 11-60 on July 5, 2013).

statutory responsibility for promoting the safety of life and property no longer justifies relying solely on the implementation of key best practices on a voluntary basis.⁵³

Voluntary compliance with best practices is not the foundation upon which to build vital fixed and mobile broadband infrastructure. Industry best practices may be ignored by some providers,⁵⁴ resulting in a patchwork quilt of performance that will potentially harm all who are connected to next generation networks. The interconnected nature of telecommunications networks results in an outcome where the overall network is only as strong as its weakest link. Variations in compliance with industry best practices have the potential to spill over, and the direct and external costs associated with unreliable networks makes the use of standards reasonable.

Standards Complement Disclosure

The Commission's statutory objectives of promoting the "safety of life and property" through the use of radio communications⁵⁵ will not be well served through smart disclosure alone. Standards are needed to ensure that minimum levels of performance are achieved, and standards can serve as benchmarks that generate performance data that can be used by consumers.

For example, as noted above, consumers can utilize information on air carrier on-time performance to inform their choices. However, while there is no question that airlines can compete on measures such as on-time performance, other areas of air carrier performance are more complex, or pose significant public safety concerns. These critical elements of air carrier performance are not left to smart disclosure alone. There are numerous regulations that establish

⁵³ *In the Matter of Improving 911 Reliability; Reliability and Continuity of Communications Networks, Including Broadband Technologies*, PS Docket No. 13-75, PS Docket No. 11-60, Report and Order December 12, 2013, ¶28.

⁵⁴ "Impact of the June 2012 Derecho on Communications Networks and Services, Report and Recommendations," Public Safety and Homeland Security Bureau Federal Communications Commission January 2013, p. 39. (Hereinafter, "*Derecho Report*".)

⁵⁵ NPRM, ¶9.

the standards that govern the operations of air carriers. For example, Title 14, §125 of the Code of Federal Regulations governs, among many other factors, the following components of a commercial airliner, or operations of an aircraft: the composition of the flight crew, the materials used in cabin interiors, the structure of internal doors, the function of ventilation systems, fire precautions, pressure cross-feed arrangements, location of fuel tanks, fuel system lines and fittings, firewalls, firewall construction, cowling, fire-extinguishing systems, and course, the familiar demonstration of emergency evacuation procedures.

These regulatory provisions affect an aspect of airline service quality that consumers are likely to be highly concerned about—the airworthiness and safety of the aircraft and the capabilities of the flight crew. These critical aspects of airline performance are not left to smart disclosure and market forces alone. Consumers would have a hard time assessing these areas, and the risks associated with air carriers cutting corners would generate high social costs associated with the loss of life and property should the airlines fail to perform adequately. Aircraft are highly complex devices, and airlines are complex firms. The regulations governing the operations of aircraft and airlines can and do exist as an underlying assurance to the traveling public that they can expect high-quality aircraft and safely run airlines. Smart disclosure may enhance consumer choice, but it does not rise to the level of replacing the need for standards. While these standards may work in concert with smart disclosure, the need for standards is not eliminated due to the application of smart disclosure principles.

Externalities Enhance the Need for Standards

It may be the case that some consumers, due to income limitations or preferences, do not want to purchase a high-quality product. If the product is not subject to external effects (i.e., if the consumer's choice has no impact on other consumers), then market forces have the potential to

deliver a socially optimal level of product quality—some consumers will choose high quality products, and other will choose low quality products. The optimality of this scenario is challenged, however, if the choices made by the low-quality consumers negatively impact other consumers. Telecommunications networks certainly fall into the category of providing services subject to external effects. As a networked product, the quality experienced by consumers using one network provider may be affected by the quality of service associated with other network providers. The choice of a low-quality service provider spills over and affects that quality of calls made or received by consumers who prefer a high-quality network.

However, there are additional external effects associated with telecommunications networks that extend beyond the inconvenience of a poor-quality call experience. If my neighbor prefers low-quality, low-priced telecommunications services that do not perform well during emergency situations, my life and property may be affected. If my neighbor cannot reach 911 services due to prolonged outages in the low-quality network that they have selected, their ability to report events that place the community at risk is hindered, and others in the community may suffer consequences. In summary, telecommunications networks are subject to externalities, and the existence of externalities contributes to the need for standards. Not only do consumers gain more value from a larger network, but the inability of some consumers to reach first responders through 911 may impose costs on the community. Standards can correct the potential for market failure when externalities are present.

In other industries, standards prevent spillover effects arising from consumers and firms who might be willing to compromise on quality. For example, the quality of an automobile directly affects the consumer who is driving it, should that vehicle fail to perform properly. However, other drivers and pedestrians may also suffer the consequences of another consumer's choice of a

poor quality vehicle. Regulations are in place to ensure that the automobiles that consumers purchase meet minimum quality standards, and these standards reduce spillover effects associated with low-quality vehicles. Today standards associated with automobile safety and performance cover a wide variety of factors that will affect the quality of an automobile. Standards apply for safety equipment and fuel economy, as well as windshield defogging systems, windshield wipers, braking systems, passive restraints, active restraints, tires, etc., etc.⁵⁶ With these standards in place, automobile manufacturers are then free to compete on other aspects of quality, such as the reliability of their vehicles, or a vehicle's performance during a crash test.

The Path Forward for Reporting and Standards

As discussed above, AARP believes that the Commission should publish a broad range of information regarding carrier performance during "normal" and "emergency" conditions. The publication of DIRS-outage reporting information proposed in the NPRM is one component of an information set that can contribute to consumers' ability to make informed choices. However, DIRS-outage reporting information alone is insufficient. As noted by the Task Force on Smart Disclosure, smart disclosure requires that service providers make data about *the full range of their service offerings* available in machine readable formats such that consumers can then use these data to make informed choices about the goods and services they use. The Task Force on Smart Disclosure also noted that *the choice engines that can be enabled by smart disclosure need access to large amounts and many types of data and information*. Carriers already have data regarding the performance of their networks, and that data should also be collected by the

⁵⁶ See, Code of Federal Regulations, Title 49--Transportation, Subtitle B--Other Regulations Relating to Transportation, Chapter V--National Highway Traffic Safety Administration, Department of Transportation Subchapter B--Safety Approval of Cargo Containers Part 571--Federal Motor Vehicle Safety Standards.

Commission and made available consistent with smart disclosure principles. However, while this larger volume of data is consistent with smart disclosure, for the reasons discussed above, AARP also believes that standards are necessary.

The Commission Should Establish Standards for Backup Power for Wireless Central Offices and Cell Sites

As the NPRM notes, in 2007 the Commission imposed, and then later retracted, standards associated with backup power for wireless networks.⁵⁷ Those standards required that ILECs and wireless providers ensure that 24 hours of backup power be provided within central offices, and that eight (8) hours of backup power be available at cell sites.⁵⁸ In an Order on Reconsideration, the Commission modified the rules, and introduced various exemptions. The exemptions addressed some of the concerns raised by the petitioning parties.⁵⁹ However, legal challenges persisted and the Commission ultimately informed the reviewing court that it would retract the rules, pending further rulemaking.⁶⁰ The Commission sought additional information through a 2011 rulemaking.⁶¹ As noted above, the Commission addressed a subset of central offices in the recent *911 Reliability Order*, but for the balance of central offices and cell sites, no further action has been taken.

⁵⁷ NPRM, ¶62, footnote 86.

⁵⁸ *In the Matter of Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, EB Docket No. 06-119, WC Docket No. 06-63, Order, June 8, 2007, Appendix B, §12.2.

⁵⁹ *In the Matter of Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, EB Docket No. 06-119, WC Docket No. 06-63, Order on Reconsideration, October 4, 2007, Appendix B, Amended §12.2.

⁶⁰ *In the Matter of Reliability and Continuity of Communications Networks, Including Broadband Technologies, Effects on Broadband Communications Networks of Damage or Failure of Network Equipment or Severe Overload, Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, PS Docket No. 11-60, PS Docket No. 10-92, EB Docket No. 06-119 Notice of Inquiry, April 7, 2011, ¶13.

⁶¹ See, *Id.*

AARP believes that the Commission must establish standards for backup power for wireless central offices and cell sites.⁶² There is simply too much riding on the reliability of next generation broadband networks, both wireless and wireline, to continue with the industry left to its own devices, which the record now clearly shows does not provide for sufficient backup power arrangements.⁶³ The safety of “life and property” is a foundation of the Commission’s statutory mission. It will be most unfortunate if future events lead to losses that the Communications Act charges the Commission to guard against. For the central offices and cell sites that are not addressed in the *911 Reliability Order* AARP recommends that the Commission reimpose the 2007 standards, as modified in the October 4, 2007 *Order on Reconsideration*.⁶⁴ The standards promulgated in that Order continue to be appropriate, and the Commission now has additional experience associated with Superstorm Sandy and the 2012 Derecho that shows the continuing need for reliable networks when grid power is interrupted. As noted by NENA in the *911 Reliability* proceeding, backup power at *all* central offices is a reasonable requirement:

For low-risk or low-impact facilities, such as non-SR (selective router) COs, NENA believes that a prudent standard would begin at a minimum of 24 hours of uninterrupted backup power (whether provided by batteries, generators, fuel cells, etc.), with a normal range of 72 hours.⁶⁵

⁶² AARP also believes that wireline broadband networks must have similar standards imposed. As noted in the *911 Reliability Order*, about 72 percent of central offices are left uncovered by the Commission’s backup power rules. This indicates that large numbers of consumers who rely on wireline facilities could be at risk of service interruption due to power outages.

⁶³ See, *911 Reliability Order*, Katrina Order, Derecho Report, and NPRM.

⁶⁴ *In the Matter of Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, EB Docket No. 06-119, WC Docket No. 06-63. Order On Reconsideration, October 4, 2007, Appendix B.

⁶⁵ Comments of NENA: The 911 Association In the Matter of Improving 911 Reliability; Reliability and Continuity of Communications Networks, Including Broadband Technologies, PS Docket No. 13-75, PS Docket No. 11-60, May 15th, 2013, p. 12.

The 24-hour backup power requirement for central offices associated with the 2007 rules continues to be appropriate, and the 8-hour backup power requirement for cell sites is conservative.⁶⁶

Conclusion

The Commission's foundational mission of promoting safety of life and property through the use of wire and radio communication must persist during the transition to next-generation networks. Given the expansive and growing role of mobility and fixed broadband networks in economic and social activities, failure to insure that networks are reliable will undermine the benefits of broadband, and limit the economic development potential of these technologies. While AARP supports the role of "smart disclosure" in empowering consumers, the Commission must also establish standards for network reliability. Given the critical role that telecommunications services play, and the networked nature of these services, where all connected users may be negatively affected by weak links in the system, the Commission must establish foundational levels of network performance, thus ensuring that its statutory responsibilities are successfully carried out.

⁶⁶ Some carriers have begun to take facilities off the grid entirely, indicating that the economics of "back-up power" is evolving. See, for example, "T-Mobile Cell Site Now Powered by the Sun," GigaOM, September 16, 2010, <http://gigaom.com/2010/09/16/t-mobile-cell-site-now-powered-by-the-sun/>. See also, "Verizon Launches Green Energy Project to Power 19 Company Facilities Across the Country," Verizon Press Release, April 30, 2013, <http://newscenter.verizon.com/corporate/news-articles/2013/04-30-green-energy-project/#sthash.dZ1x5Jvw.dpuf>