Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Reliability and Continuity of Communications Networks, Including Broadband Technologies 9-1-1 Resiliency and Reliability in Wake of June 29, 2012, Derecho Storm in Central, Mid-Atlantic, and Northeastern United States	PS Docket No. 11-60

COMMENTS OF FAIRFAX COUNTY, VIRGINIA

Edward L. Long Jr.
County Executive
12000 Government Center Parkway
Suite 552
Fairfax, Virginia 22035

Steve Souder
Director
Department of Public Safety Communications
4890 Alliance Drive
Fairfax, Virginia 22030

David P. Bobzien, County Attorney
Michael Long, Deputy County Attorney
Erin C. Ward, Assistant County Attorney
Office of the County Attorney
Fairfax County, Virginia
12000 Government Center Parkway
Suite 549
Fairfax, Virginia 22035
703-324-2421

August 17, 2012

Table of Contents

EXHIBIT 7: Resolution Adopted by Metropolitan Washington Council of Governments Board of Directors To Encourage Steps To Address Verizon 9-1-1 Service Gaps During And Following The Derecho Storm On June 29, 2012

SUMMARY

Local public safety-operated 9-1-1 Call Centers (Public Safety Answering Points or "PSAPs") provide only part of the service that a 9-1-1 caller needs. Regardless of the device from which a call is placed and regardless of which provider serves a caller, all 9-1-1 calls are routed to the facilities of the local carrier that provides 9-1-1 service for the jurisdiction. That local carrier routes the calls to the appropriate 9-1-1 Call Center. In Fairfax County ("County"), and throughout the National Capital Region, the carrier that provides 9-1-1 services is Verizon.

The derecho struck Fairfax County at approximately 10:30 at night on Friday, June 29, 2012. Electrical power to the County's 9-1-1 Call Center flickered as commercial power was lost, but the PSAP's generators instantly activated and operations continued uninterrupted. Apparently, Verizon was not so well prepared for the commercial power loss. As a result of the backup power failures, and the failure and damage of other Verizon equipment, 9-1-1 service in Fairfax County failed at 7:36 the next morning. For the next seven hours-plus, no 9-1-1 calls were routed to Fairfax County's 9-1-1 Call Center. Thereafter, service was partially restored, but remained sporadic until Tuesday, July 3. The partial data Verizon has provided the County so far show that almost 1,900 calls to 9-1-1 were not routed to the County's 9-1-1 Call Center. Verizon has committed to provide the County additional data on how many calls to 9-1-1 were not routed to the County's 9-1-1 Call Center between June 30 and July 3.

Nothing unique to the derecho caused the 9-1-1 failure. Power outages are not uncommon events and they are more common during bad weather or emergencies – in other words, those times when 9-1-1 service is especially important. Moreover, the derecho-related 9-1-1 outage was the latest in a string of 9-1-1 failures in the County and elsewhere in the metropolitan Washington D.C., area. The causes and the extent of these 9-1-1 failures varied.

Therefore, the ferocity of the derecho does not explain the 9-1-1 outage; instead, its relevance is as a reminder of *the need for* resilient and reliable 9-1-1 service. During and after severe weather events, and in any emergency or disaster, the loss of the public's ability to contact emergency responders is most profoundly felt.

In these Comments, the County recommends several actions Verizon needs to take to improve its 9-1-1 service. The first five recommendations have been adopted by the Directors of the 9-1-1 Call Centers for the member jurisdictions of the Metropolitan Washington Council of Governments and the Director of the 9-1-1 Call Center for Stafford County, Virginia. Verizon should implement these five measures promptly to improve 9-1-1 service in the Washington, D.C., area immediately.

In addition, the County recommends that Verizon evaluate two broader categories of its operational systems and procedures and provide information to the Commission, Verizon's Washington-area 9-1-1 customers, and the public about how Verizon can improve 9-1-1 service over the longer term. First, the County urges the Commission to require Verizon to identify what elements of its network and supporting central office equipment are mission-critical facilities for 9-1-1 service and explain how Verizon intends to provide the necessary degree of reliability for these mission-critical facilities. Verizon should publicly identify its risk tolerance policy related to its backup and recovery capabilities for 9-1-1 service. Verizon also should critically review its operational practices and Continuity of Operations and Disaster Recovery plans, which should be tested routinely. Second, Verizon must establish alternative methods of communication for critical Verizon personnel to reach PSAP personnel during incidents.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Reliability and Continuity of Communications Networks, Including Broadband Technologies 9-1-1 Resiliency and Reliability in Wake of June 29, 2012, Derecho Storm in Central, Mid-Atlantic, and Northeastern United States	PS Docket No. 11-60

COMMENTS OF
FAIRFAX COUNTY, VIRGINIA

The County of Fairfax, Virginia, submits these comments in response to the Public Notice released July 18, 2012, seeking comment on the causes of the communications outages, especially the 9-1-1 outages, from the June 29, 2012, derecho; the effect of those outages on 9-1-1 systems and services; the impact of the outages on various segments of the public, including consumers, public safety officials, and providers of critical services; and the resiliency and reliability of 9-1-1 communications generally.

I. BACKGROUND.

A. Introduction.

As the Commission has observed, "9-1-1 service is a vital part of our nation's emergency response and disaster preparedness system."[1] Therefore, any evaluation of that service's

[1] FCC Encyclopedia; 9-1-1 and E9-1-1 Services, http://www.fcc.gov/encyclopedia/9-1-1-and-e9-1-1-services (last visited Aug. 7, 2012).

resiliency and reliability must look at how it performs *in an emergency or disaster*. A robust and reliable 9-1-1 system is critical to public safety under normal operating circumstances, but it is *indispensable* when a violent storm strikes or when some other natural or human-made crisis multiplies the typical need for emergency responders.

The derecho hit Fairfax County at approximately 10:30 at night on Friday, June 29, 2012. At 7:36 the next morning, as hundreds of thousands of County residents awoke to assess the full extent of the damage in daylight, the phones stopped ringing. Over the next seven hours, no calls were completed to the County's 9-1-1 Call Center. On the afternoon of Saturday, June 30, sporadic, incomplete service was restored. Three additional days passed before 9-1-1 service was fully restored at 11:30 a.m. on Tuesday, July 3, 2012.[2]

Fairfax County's 9-1-1 Call Center operated exactly as it was designed, intended, and constructed to operate. Verizon has told the County that the 9-1-1 failure was caused primarily by a loss of power in two key Verizon central offices (Arlington and Fairfax). Many other Verizon central offices in the region lost power as well, which exacerbated the effects of the loss of Verizon's Arlington and Fairfax central offices. The 9-1-1 failure affected several other Northern Virginia jurisdictions in addition to Fairfax County.

The data Verizon has provided the County to date show that nearly 1,900 calls made to 9-1-1 entered Verizon's system but were not routed to the County during the first 29 hours. The County is awaiting the receipt of additional data from Verizon.

The 9-1-1 outage wrought by the derecho was the longest and most severe since Fairfax County implemented Enhanced 9-1-1 ("E9-1-1") service in 1988, but it was not unprecedented.

[2] Declaration of Steve Souder, attached as Exhibit 1, at ¶¶ 8, 12, 17. Verizon's brief report on the failure released August 13, 2012, incorrectly suggests that service was fully restored on June 30. *Verizon, 911 Service, and the June 29, 2012 Derecho* ("*Verizon Report*") (August 13, 2012) at 1.

Instead, it was the latest in a series of recent 9-1-1 problems in the National Capital Region that demonstrate that the 9-1-1 infrastructure is not as resilient or as reliable as it needs to be.

B. Fairfax County's 9-1-1 Call Center ("PSAP").

Fairfax County is home to about 1,100,000 people.[3] More than 20% of the more than five million residents of the metropolitan Washington, D.C., area live in Fairfax County.[4] The County is home to half of the metropolitan area's Fortune 500 companies,[5] a major university,[6] and the headquarters of numerous federal intelligence agencies, including the Central Intelligence Agency, National Geospatial-Intelligence Agency, and the National Reconnaissance Office.

Fairfax County has made the provision of public safety services, including 9-1-1 service, to its residents, businesses, and visitors one of its highest priorities. Fairfax County's 9-1-1 Call Center is the largest in the Commonwealth of Virginia and one of the ten largest in the United States. Besides the County's 1.1 million residents, the County's 9-1-1 Call Center also serves as the PSAP for the City of Fairfax, the Towns of Vienna and Herndon, and the Fort Belvoir U.S. Army base.[7]

---

[3] *Demographic Reports 2011*, County of Fairfax, Virginia, at II-2, *available at* http://www.fairfaxcounty.gov/demogrph/demrpts/report/fullrpt.pdf.

[4] *Our Changing Region: Highlights from the 2010 Decennial Census*, Metropolitan Washington Council of Governments, published July 23, 2011, at 1, *available at* http://www.mwcog.org/uploads/pub-documents/pV5eWV020111011135345.pdf.

[5] See Fortune 500 List compiled by the Fairfax County Economic Development Authority, *available at* http://www.fairfaxcountyeda.org/fortune-500-list (last visited Aug. 7, 2012).

[6] George Mason University, located in the central part of Fairfax County, is the largest public university in the Commonwealth of Virginia. See http://about.gmu.edu/ (last visited Aug. 7, 2012).

[7] Souder Declaration, Exhibit 1, at ¶ 1.

The PSAP is located in the McConnell Public Safety and Transportation Operations Center ("MPSTOC"). The MPSTOC has a 12,000-square foot operations floor equipped with 94 consoles. Seventy-two of the consoles serve the County's Department of Public Safety Communications ("DPSC"), which operates the 9-1-1 Call Center and dispatches for the County's Police Department and Fire and Rescue Department. The other consoles are used by the Virginia State Police and the Virginia Department of Transportation, which are collocated on the operations floor to promote collaboration between County and State agencies in responding to both routine and unique events around the clock, 365 days of the year. The County's Emergency Operations Center is also located in the MPSTOC.[8]

Forty-six of the consoles are equipped to answer 9-1-1 calls. Each of these consoles is equipped with a 9-1-1 telephony terminal, a computer-aided dispatch ("CAD") terminal with geographic information systems ("GIS") mapping and aerial photography of the entire County, and a corporate personal computer. All Public Safety Communicators are certified in emergency medical dispatch, which enables them to provide instruction to callers reporting medical emergencies. The 9-1-1 Call Center receives approximately one million calls per year. In the month of May 2012, the PSAP received 33,514 calls through 9-1-1, and another 6,334 calls on the County's 10-digit emergency call number. The average speed to answer calls made to 9-1-1 was two seconds; the average speed to answer calls made to the 10-digit emergency number was three seconds.[9]

DPSC's Public Safety Training Academy is one of only thirty-one 9-1-1 Call Centers in the country to be certified as an Association of Public Safety Communications Officials

[8] Souder Declaration, Exhibit 1, at ¶¶ 1, 4.

[9] Souder Declaration, Exhibit 1, at ¶ 5.

("APCO") Project 33 Training Program. Of 6,100 PSAPs in the United States, DPSC is one of only 68 to be named as a National Center for Missing and Exploited Children 9-1-1 Call Center Partner. [10]

In addition to its primary 9-1-1 Call Center, Fairfax County maintains an alternate PSAP about eight miles east of the MPSTOC. The alternate facility serves as a backup in the event the County's primary 9-1-1 Call Center should become inoperable or uninhabitable for any reason.[11]

However, 9-1-1 call centers only provide part of the service that a 9-1-1 caller needs. To provide 9-1-1 service, PSAPs partner with others, including the nation's telecommunications carriers. Regardless of whether a call is placed from a wireline phone, a wireless phone, or a broadband network, and regardless of which telephone company serves a 9-1-1 caller, all 9-1-1 calls are routed to the facilities of the local carrier that provides 9-1-1 service for the jurisdiction. That local carrier routes the calls to the appropriate 9-1-1 call center. In Fairfax County, and throughout the National Capital Region, the carrier that provides 9-1-1 services is Verizon Communications, through its subsidiaries Verizon Virginia Inc., Verizon Washington D.C., Inc., and Verizon Maryland Inc. (collectively referred to herein as "Verizon").[12] The cost to Fairfax

[10] Souder Declaration, Exhibit 1, at ¶ 6. More facts, statistics, and a web "tour" of the MPSTOC and the County's 9-1-1 Call Center are available on the County's website at http://www.fairfaxcounty.gov/westox/mpstoc/ and http://www.fairfaxcounty.gov/911/ (last visited Aug. 7, 2012).

[11] Souder Declaration, Exhibit 1, at ¶ 7.

[12] The majority of wireline customers in the Washington, D.C., metropolitan area use Verizon or another provider for local telephone services from their homes or businesses which could also be impacted by a power loss event and thus compromise the customer's ability to make a call out to 9-1-1. Regardless of commercial carrier service, all calls to reach 9-1-1 go through the Verizon 9-1-1 network. Also, new communications technology such as Verizon FiOS, which uses fiber-optic cabling and power supply equipment installed in neighborhoods, did not have enough power continuity during the derecho event to sustain a multi-day power failure, thus those customers experienced service disruption.

County for Verizon's 9-1-1 services to the primary and alternate PSAPs is approximately $3 million annually.

II. VERIZON EQUIPMENT FAILURE DURING THE DERECHO PREVENTED ROUTING OF 9-1-1 CALLS AND/OR THE TRANSMISSION OF 9-1-1 CALLERS' AUTOMATIC NUMBER AND AUTOMATIC LOCATION IDENTIFICATION ("ANI/ALI") TO FAIRFAX COUNTY'S PSAP OVER A FOUR-DAY PERIOD.

A. The Derecho Strikes: Friday, June 29.

The derecho struck Fairfax County at approximately 10:30 at night on Friday, June 29, 2012.[13] Electrical power to the County's 9-1-1 Call Center flickered as commercial power was lost, but the PSAP's generators instantly activated and operations continued uninterrupted. In the next three and one-half hours the volume of calls received increased by 415% over the same period the previous week.[14] County residents placed hundreds of calls to report or seek help for downed power lines, fallen trees, obstructed roadways, inoperable traffic control systems, vehicle accidents, and personal injuries. Fire and Rescue dispatches increased by 2,464% when compared to the same time period the previous week, and Emergency Medical Services dispatches increased by 89%.[15]

Within an hour, Fairfax County activated its Emergency Operations Center. At 1:16 a.m., on Saturday, June 30, the County published its first storm-related news, encouraging

[13] The information provided in this Section II describing the storm, how it affected Fairfax County, and how the County responded is taken from a presentation by County Executive Edward L. Long Jr., to the Board of Supervisors at its first post-derecho meeting on July 10, 2012, unless another source is cited. A summary of the presentation, the County Executive's slideshow, photographs, and reports by the County departments that led the County's response efforts is available at http://www.fairfaxcounty.gov/emergency/reports/june-29-derecho/. A screenshot of that page is included in Exhibit 3.

[14] Souder Declaration, Exhibit 1, at ¶ 8, 9.

[15] Souder Declaration, Exhibit 1, at ¶ 9.

residents to call 9-1-1 only for emergencies and not for power outages – a normal message during storms and other events when it is anticipated that there will be a higher-than-normal call volume. Around 2:00 a.m., on Saturday, June 30, calls to the 9-1-1 Call Center tapered off and operations returned to normal.

B. Verizon's 9-1-1 Service Goes Out: Saturday, June 30, 7:36 A.M.

The first indication of trouble came at approximately 6:00 a.m. on Saturday, June 30, when Verizon notified the 9-1-1 Call Center, via an email and a phone call, that three of the four links that provide Automatic Location Identification ("ALI") to the PSAP were out of service. However, the 9-1-1 Call Center was still receiving ALI with 9-1-1 calls through the remaining link. The 9-1-1 Call Center notified County staff of this issue via the County's Emergency Alert Network.[16]

At 6:55 a.m., Verizon sent a cryptic email to designated Fairfax County staff saying that the Arlington central office was without power or backup battery/generator.[17] The references to Arlington suggested that 9-1-1 service was affected only in Arlington County. Without a corresponding phone call explaining the situation and the email, Fairfax County's PSAP staff continued with their normal operations, unaware that incoming 9-1-1 call service from Verizon was about to rapidly deteriorate.[18]

[16] Souder Declaration, Exhibit 1, at ¶ 10.

[17] A copy of Verizon's email is included in Exhibit 2.

[18] Souder Declaration, Exhibit 1, at ¶ 11.

At 7:36 a.m., the 9-1-1 Call Center received its last 9-1-1 call. As a result of Verizon service failures, no 9-1-1 calls, ten-digit emergency calls, or non-emergency calls were routed through to the PSAP for approximately the next seven hours.[19]

The PSAP immediately began the process of switching its 9-1-1 operations to its backup phone lines. DPSC officials initiated repeated calls to Verizon representatives to determine why the County was not receiving 9-1-1 calls, but were unable to contact Verizon using wireline or wireless telephone equipment. The County concluded there might be some problem with service that was specific to the PSAP. DPSC officials also attempted, unsuccessfully, to call other 9-1-1 Call Centers in the area to determine the status of their 9-1-1 service.[20]

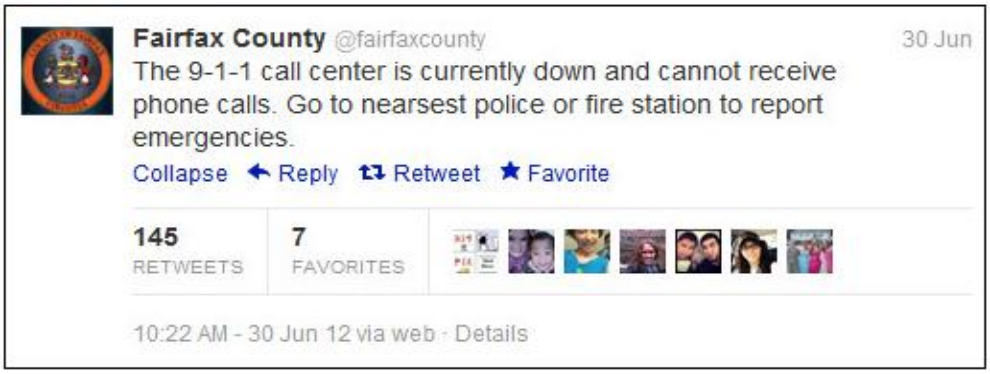
At about 9:36 a.m., Verizon notified the DPSC Director via telephone that Verizon was having major problems, resulting in a 9-1-1 service outage.[21]

At 10:11 a.m., the County posted its first announcement that phone calls were not reaching the 9-1-1 Call Center. The County was put in the wholly unacceptable position of having to advise the public that, in the case of emergency, they should go to the nearest police or fire station for assistance. The County employed social media tools to get the word out virally (such as shown in the Twitter screen shot below) and provided the information to the traditional press.

[19] Souder Declaration, Exhibit 1, at ¶ 12.

[20] Souder Declaration, Exhibit 1, at ¶ 13.

[21] Souder Declaration, Exhibit 1, at ¶ 14.



At 10:31 a.m., Verizon sent an email to Northern Virginia PSAPs saying that Verizon was experiencing 9-1-1 outages in many regions due to the storm.[22]

By 1:00 p.m., the County had relocated its public safety communications staff to the County's alternate PSAP, hoping that it could receive calls there. However, the County discovered that due to the Verizon equipment failure, 9-1-1 calls could not be routed to the alternate PSAP either.[23]

At about the same time the 9-1-1 outage began, County residents awoke to assess the storm damage in the daylight. The damage was extensive. More than 55% of the County's residences and businesses lost commercial power during the storm, as did police stations, fire stations, traffic control systems, and facilities that serve vulnerable residents, like hospitals. Wireline, cellular telephone, and broadband services were widely disrupted. More than 100 homes were damaged by fallen trees. The city of Falls Church's water system, which provides water service to portions of the County, issued a warning advising its customers not to drink tap water without boiling it first. The network of dedicated Verizon lines that is utilized in conjunction with a Supervisory Control and Data Acquisition system to remotely monitor 63

[22] A copy of Verizon's 10:31 a.m., email is included in Exhibit 2.

[23] Souder Declaration, Exhibit 1, at ¶ 15.

wastewater pumping station operations went offline. The County's public works staff rotated on 12-hour shifts to monitor operations of the pumping stations manually to assure no sanitary sewer overflows occurred and to detect any operational issues immediately.

The County's public safety agencies called in additional staffing to deploy more officers on the street. Contacting off-duty personnel was challenging because of the pervasive outage of telephone service. At least 165 roadways and intersections were either blocked by downed trees or other debris, or were without power, creating severe traffic hazards and hampering emergency responders. Officers were assigned to some of the large, dangerous intersections to manually direct traffic. Police delivered generators to critical intersections to provide power to traffic lights, which then required constant monitoring, and they placed traffic cones or erected barriers to close other roadways or restrict turns. Fire and rescue personnel began checking with assisted living facilities, nursing homes, and hospitals to determine whether they had power and, if they were on backup power, whether they had sufficient fuel. Fire officials estimated that more than 60% of the skilled nursing facilities in the County had no land-line phone service and 50% of them did not have commercial power. Meanwhile, both the Police and the Fire and Rescue Departments had to staff their stations to handle walk-in "emergency calls" as a result of the 9-1-1 failure. The temperature on Saturday, June 30, reached 94 degrees, creating extreme conditions for County residents without power and for emergency responders.[24]

[24] AccuWeather.com for Fairfax, Virginia, June 2012, http://www.accuweather.com/en/us/fairfax-va/22030/june-weather/336254 (last visited Aug. 7, 2012).

C. Verizon's 9-1-1 Service Is Partially Restored: Saturday, June 30, 3:00 P.M.; Verizon's 9-1-1 Service Is Fully Restored: Tuesday, July 3, 11:30 A.M.

At 3:00 p.m. on Saturday, June 30, more than seven hours after the last 9-1-1 call had come through to the County's PSAP, Verizon restored minimal and sporadic 9-1-1 service. Verizon advised the County that 9-1-1 call routing was restored, but that the ALI data would not be transmitted due to failed Verizon equipment that was still under repair. Staff that had relocated to the County's alternate PSAP returned to the primary PSAP at the MPSTOC. The County switched from the backup phone system at MPSTOC to the primary phone system.[25] At 3:56 p.m., the County published an update on its website announcing that 9-1-1 service was partially restored, and supplying two additional numbers residents could call if they could not get through to 9-1-1.

Verizon has acknowledged that even after 3:00 p.m., on Saturday, some 9-1-1 calls that entered its system were not routed to the PSAP and received a busy signal. Calls that were successfully routed to the PSAP did not have ALI. Over the next two and one-half days, with daily temperatures in the 90-degree range[26] and hundreds of thousands of County residents without power, 9-1-1 service remained sporadic. Full 9-1-1 service was restored in Fairfax County on Tuesday, July 3, at about 11:30 a.m.[27]

---

[25] Souder Declaration, Exhibit 1, at ¶ 16.

[26] AccuWeather.com for Fairfax, Virginia, July 2012, http://www.accuweather.com/en/us/fairfax-va/22030/july-weather/336254 (last visited Aug. 7, 2012).

[27] Souder Declaration, Exhibit 1, at ¶ 17. On August 13, 2012, just before these comments were due, Verizon issued a brief report on the outage. The *Verizon Report* incorrectly suggests that service was fully restored on June 30. That was not the case.

D. Verizon's Data on 9-1-1 Calls That Were Not Routed to the PSAP.

The County asked Verizon for data on the number of 9-1-1 calls attempted to the County's PSAP but not completed between Saturday, June 30, and Tuesday, July 3, 2012. To date, Verizon has only provided data for the 29-hour period starting when the outage began at 7:36 a.m., on June 30 and ending at 12:30 p.m., on July 1. According to Verizon, nearly 1,900 9-1-1 calls entered Verizon's system but were not routed to the County during the first 29 hours alone. The County believes the majority of those calls occurred during the seven-hour period when 9-1-1 service was completely down, but the data Verizon provided does not show when the calls were placed or how many callers were unable to get through to the 9-1-1 Call Center after service was partially restored. Verizon has told the County that it does not have data for the succeeding period of approximately 12 hours after 12:30 p.m., on July 1. The County has reiterated its request for the data for the remainder of the time until full service was restored on July 3.[28]

E. The County's Outreach to Its Residents.

Publicizing the 9-1-1 outage and the storm recovery efforts presented a particular challenge for Fairfax County's government because more than half of the County's residents did not have electricity and large numbers of them did not have wireline, cellular telephone or Internet service due to loss of power. In order to reach the greatest number of its residents, the County employed a variety of communications tools, both active and passive, over multiple platforms.

During the course of the 9-1-1 outage, the County provided information through its Emergency Information Blog, which is distributed through online posting as well as delivery via

[28] Souder Declaration, Exhibit 1, at ¶ 18.

email subscriptions and RSS feeds, and posted information on the County's website.[29] The County's Office of Public Affairs, individual elected officials, and some of its emergency response officials used social media sites Twitter, Facebook, and YouTube[30] to disseminate information. County officials gave on-camera and telephone interviews with traditional media sources. The 9-1-1 outage was the focus of a press conference held by Virginia Governor Robert McDonnell and Fairfax County Board of Supervisors Chairman Sharon Bulova early Saturday afternoon, June 30, which was heavily covered by the media. Volunteers in the County's Office of Emergency Management telephoned 161 people who had signed up for the County's Special Medical Needs Registry and whom the County identified as living within the areas of the County that were out of power, making repeated calls over three days to persons without phone service until contact was made. The County sent emergency alerts via text, email, and pager through the Community Emergency Alert Network. The County's emergency information hotline was updated to provide information via telephone for residents who had phone service.

In advising residents about the loss of both 9-1-1 service and alternate 10-digit telephone numbers to the PSAP, the County was placed in the position of having to advise the public to go to the nearest police or fire station if they needed emergency assistance. Requesting the public, including people in acute medical crisis, the elderly, the chronically ill, and residents who live

[29] The County's Emergency Information blog is at www.fairfaxcounty.gov/emergency/blog; the County's website is at www.fairfaxcounty.gov; and the County's daily newsfeed, Newswire is at www.fairfaxcounty.gov/news/. All of those pages are updated frequently. A list of the postings on the County's Emergency Information blog from June 29, 2012, to July 5, 2012, and selected screenshots from the County's website during that time period are included in Exhibit 3.

[30] The County's social media sites are at http://twitter.com/fairfaxcounty; www.facebook.com/fairfaxcounty; and www.youtube.com/fairfaxcountygov. Selected screenshots from these sites from the time period June 29, 2012, to July 5, 2012, are included in Exhibit 3.

alone or are home alone, to locate and travel to a police or fire station in the event of an emergency is unacceptable. This situation cannot be allowed to recur.

III. THE 9-1-1 OUTAGE WAS CAUSED BY THE FAILURE OF VERIZON'S BACKUP POWER SOURCES AND EQUIPMENT FAILURE/DAMAGE AND WAS COMPOUNDED BY VERIZON'S FAILURE TO PROVIDE PROMPT AND EFFECTIVE NOTICE TO THE COUNTY'S PSAP.

A. The 9-1-1 Outage Was Caused by the Failure of Verizon's Backup Power Sources and Equipment Failure/Damage.

The Commission, like Fairfax County, will look to Verizon to explain in detail why the County lost 9-1-1 service during the derecho. The County asked Verizon to provide it with a full report on the cause of the outage. Verizon provided a summary level report to Fairfax County on August 13, 2012, and an overview of the report via conference call. The *Verizon Report* candidly acknowledges Verizon's shortcomings, deficiencies and errors, and it contains some, but not all, of the details surrounding the root causes Verizon identified in its investigation of the outage. Verizon lists corrective actions it already has taken and commits to take in the future. Additional details and recommendations specific to each PSAP are, per Verizon, to be given in individual meetings yet to be scheduled with each PSAP. Based on the information Verizon has provided the County to date, the outage was clearly caused by the loss of commercial power and magnified by Verizon's inadequate power backup plans, equipment, and procedures.

The storm cut off commercial power to the Arlington central office at about 10:55 p.m., on June 29, shortly after the storm began. The Arlington systems automatically switched to backup battery power, which is designed to carry the power load until the two backup generators onsite activate and transfer the load from the batteries to the backup generators. Both generators are needed at the Arlington site to carry the power load, but one of the generators failed to start. The other generator started and ran for a period of time, but without its "twin" it became

overloaded and shut down. The batteries, now carrying the full power load, supplied sufficient power until they were depleted approximately six hours later at around 5:00 a.m., on Saturday, June 30. At that point, the Verizon call transport network in the Arlington Hub which facilitates and directs communications between many Verizon end offices/central offices ("EO/CO") throughout Northern Virginia effectively went "dark." Portions of this transport network, in effect one of the "main communications highways" used to complete 9-1-1 calls, and in many cases even regular phone calls, was not operational for more than seven hours on Saturday. Power equipment in Verizon's Fairfax central office also failed, isolating the Fairfax E9-1-1 tandem switch and preventing the routing of 9-1-1 calls to the Fairfax County PSAP through the Fairfax network route. The Alexandria E9-1-1 tandem switch, a secondary route for 9-1-1 call transport, remained operational but the capability to route 9-1-1 calls to the Fairfax County PSAP failed.

Essentially, the Verizon-provided 9-1-1 telephone switching systems into Fairfax County facilities were not operating, even though the Fairfax County PSAP staff and Fairfax County telephone and computer systems were operational and unaffected by the power outages (Fairfax County has power-fail systems implemented in its PSAP). Sufficient backup power was not restored to Verizon's Arlington facility until Saturday afternoon at about 3:00 p.m. At that time, some limited 9-1-1 service became available in the region.

Verizon was unable to diagnose the extent of the tandem failure in Verizon's Fairfax central office because the power failure in the Arlington central office affected Verizon's network telemetry equipment in the Arlington EO/CO. The telemetry equipment and telemetry data allow Verizon staff in remote Network Operations Centers to "see" the status of network

equipment. Without Saturday's telemetry data, Verizon's Network Operations Center staff was diagnosing the situation from a nearly blind status.

The power failures in Arlington and Fairfax had a top-down, cascading, negative effect on intra-network communications between Verizon central offices.[31] As a result of additional power outages at other EO/CO locations, some EO/CO's were only able to provide intermittent, limited phone service of a non-emergency type to customers within a local community. At other times, due to power fluctuations at the customer location, the same EO/CO might not be able to provide any level of telephone service.

As Verizon and the power utilities rectified power issues over the next several days, elements of normal 9-1-1 call processing capabilities were restored in increments. Throughout this time, citizens were informed through various media to utilize specific ten-digit numbers that would ring into the "emergency" queue at the PSAP if they were unable to reach the County by dialing 9-1-1. The ten-digit numbers do not provide the ALI that is normally transmitted to tell the PSAP where the caller is located. These supplemental numbers were used from Saturday until Tuesday, July 3, at about 11:30 a.m., when full "normal" 9-1-1 service became available throughout the Verizon network.

B. Verizon's Failure to Give the County Prompt and Effective Notice of the 9-1-1 Outage Hindered the County's Ability to Respond.

It is no small irony that the County's ability to react to the 9-1-1 outage was delayed by the failure of one of the largest communications companies in America to communicate promptly and effectively with the County about the problems that caused the outage. Nine-one-one service is a service in which responsiveness is measured in seconds, not minutes or hours. Yet when Verizon's equipment failed, and 9-1-1 calls were not being routed to Fairfax County's

[31] *Verizon Report* at 2.

PSAP, Verizon "notified" the County using a passive and ineffective method of communication. Verizon sent PSAP officials an unclear email at 6:55 on Saturday morning referring to trouble in the Arlington central office.

As a result, when the phones stopped ringing at 7:36 a.m., on Saturday, June 30, the County did not know why. DPSC officials made repeated calls to Verizon for information and asked neighboring jurisdictions whether their PSAPs were receiving calls. Lacking clear information about the cause or the extent of the power failures, the County relocated staff to its alternate PSAP on the chance that calls were being routed there, but they were not.

Verizon's failure to communicate promptly and effectively with PSAPs in the National Capital Region is a chronic, systemic problem that urgently needs correction. It is a central issue in a proceeding currently pending before the Maryland Public Service Commission.[32] Alarmingly, in that proceeding, Verizon contends that under its Maryland tariff for 9-1-1 services, the duty to provide notice runs only one way – from the PSAPs to Verizon – and that Verizon cannot be penalized if it fails to properly notify the PSAPs about outages of which it is aware.[33] The corresponding provision in Verizon's Virginia tariff is equally one-sided, although it is differently, and incomprehensibly, stated. Verizon's Virginia tariff provides that "[t]he

[32] See Order to Show Cause, issued March 25, 2011, *In the Matter of the Commission's Investigation Into the Outages of Verizon Maryland Inc. 9-1-1 Network in Maryland*, Maryland Public Service Commission Case No. 9265, attached as Exhibit 4. The outages that are the subject of that investigation are discussed in Section IV below.

[33] Response of Verizon Maryland Inc. to Order to Show Cause, filed April 4, 2011, *In the Matter of the Commission's Investigation Into the Outages of Verizon Maryland Inc. 9-1-1 Network in Maryland*, Maryland Public Service Commission Case No. 9265, at 10 & n.8, *available at* http://webapp.psc.state.md.us/Intranet/Casenum/submit_new.cfm?DirPath=C:\Casenum\9200-9299\9265\Item_4\&CaseN=9265\Item_4.

Company or the Customer, whoever first detects a problem, shall promptly notify *the Company* in the event the system is not functioning properly."[34]

Fairfax County acknowledges that in the Maryland proceeding, Verizon "agrees wholeheartedly that communication with PSAPs during 9-1-1 events is critical."[35] The *Verizon Report* suggests, however, that the company is not yet committed to taking the necessary steps to establish that communication. For example, Verizon suggests it will expand its ineffective email alerts to texting, but does not commit to direct personal contact. Similarly, Verizon responds to the PSAPs' request for Verizon representatives on the spot in a crisis by suggesting "virtual participation in any EOC via an 'instant messaging-like' application" – a quite different and much more cumbersome method.[36]

Fairfax County does not doubt Verizon's good intentions. However, good intentions are not a sufficient substitute for the obligations to provide an essential public safety service. Verizon must be *required* to do more. In Section V below, the County recommends a number of actions that Verizon should take to improve communications with PSAPs.

IV. THE 2012 DERECHO-RELATED OUTAGE WAS NOT AN ISOLATED OR UNIQUE EVENT, BUT RATHER PART OF A SERIES OF 9-1-1 OUTAGES IN THE NATIONAL CAPITAL REGION.

That the derecho of June 29, 2012, was a ferocious storm is undeniable. However, nothing unique to the derecho caused the 9-1-1 failure. A power outage is not an uncommon event. To be sure, power outages are more common during bad weather or other emergency

[34] Miscellaneous Service Arrangements Tariff, S.C.C. Va. No. 221, Verizon Virginia LLC, Emergency 911 Services, Effective May 14, 2012, attached as Exhibit 5, at 11 (emphasis added).

[35] Response of Verizon Maryland Inc. to [Maryland Public Service Commission] Order to Show Cause, at 10 & n.8.

[36] *Verizon Report* at 8-9.

events – in other words, those times when 9-1-1 service is especially important. Unfortunately, as the Commission is aware, the derecho-related 9-1-1 failure in Northern Virginia was not an isolated or unique event; it was the latest in a series of 9-1-1 outages in the metropolitan Washington, D.C., area.[37]

Fairfax County, and Montgomery and Prince George's Counties in Maryland, experienced significant 9-1-1 disruptions during the snowstorm that hit the National Capital Region on January 26, 2011. The storm caused massive traffic jams, downed wires, and widespread losses of electricity. Not surprisingly, the storm caused a huge increase in calls to 9-1-1. Given the nature of the problems created by the storm, the increase was especially pronounced from wireless phones. Verizon switching/routing equipment misinterpreted the large number of simultaneous wireless calls as trunk/equipment failure in the PSAPs. In response, the transmitting switches automatically shut down the trunks for repair. In other words, Verizon's system was *guaranteed* to fail in a real crisis. Fairfax County has twelve trunks to receive wireless 9-1-1 calls. Nine of those trunks, representing 75% of Fairfax County's capacity to receive wireless 9-1-1 calls, were automatically removed from service during one of the busiest times the PSAP had experienced in recent history.[38] Verizon subsequently made changes in its transmitting switches to prevent a similar automatic shutdown.

Just three weeks later, on February 18, 2011, an equipment failure in Verizon's Fairfax central office intermittently affected wireless calls to 9-1-1 in Arlington and Fairfax Counties. Fairfax County notified emergency responders, the public and the media through emergency

[37] See letter from James Arden Barnett, Jr., Chief, Public Safety & Homeland Security Bureau, FCC, to Kathleen M. Grillo, Senior Vice President for Verizon Communications, dated February 17, 2011, attached as Exhibit 6.

[38] Souder Declaration, Exhibit 1, at ¶ 19.

alert messages, web postings, and repeated updates to the media, and instructed residents to call a ten-digit emergency number if they had difficulty getting through to the PSAP by dialing 9-1-1.[39]

In addition, on May 30, 2011, a power failure in Verizon's Newark, New Jersey, central office prevented the transmission of ALI data from some wireless 9-1-1 calls. According to Verizon, PSAPs in Maryland, Delaware, Pennsylvania and Virginia, including Fairfax County, were affected.[40]

A number of other 9-1-1 failures have occurred in the National Capital Region in the past two years alone. Outages that prevented 9-1-1 calls from wireline phones from reaching the PSAPs in St. Mary's, Calvert, and Charles Counties, Maryland, in July, August, and September 2010, were the subject of a hearing by the Maryland Public Service Commission before that body initiated its current investigation into additional 9-1-1 outages.[41] On December 17, 2010, and January 31, 2011, 9-1-1 service for wireless callers was interrupted in Prince George's and Montgomery Counties, caused by what Verizon described as "isolated technical difficulties."[42]

This string of 9-1-1 outages got the attention of both the Commission's Public Safety & Homeland Security Bureau and the Maryland Public Service Commission. By letter dated February 17, 2011, the Commission's Bureau Chief wrote to Verizon seeking information about the causes of the problems and potential remedial actions, and requesting a meeting to discuss

---

[39] Souder Declaration, Exhibit 1, at ¶ 20.

[40] Souder Declaration, Exhibit 1, at ¶ 21.

[41] See letter dated October 20, 2010, from Gregory Romano, Verizon General Counsel, to 9-1-1 Directors in Calvert, Charles, and St. Mary's Counties, *available at* http://webapp.psc.state.md.us/Intranet/Maillog/submit_new.cfm?MaillogPath=126077&maillogNum=126077&DirPath=C:\Casenum\Admin Filings\110000-159999\126077.

[42] Response of Verizon Maryland Inc. to [Maryland Public Service Commission] Order to Show Cause at 9.

the resolutions.[43] In March 2011, the Maryland Public Service Commission initiated the investigation on 9-1-1 outages that is still pending.[44]

It is notable that the causes and the extent of these 9-1-1 failures varied. Some were caused by inclement weather, others apparently by equipment failure unprovoked by bad weather. Some of the outages affected only calls from wireless telephones, while others prevented the completion of calls from wireline telephones. Other common disruptions involved Verizon's failure to transmit ALI data.

In short, the ferocity of the derecho does not explain the 9-1-1 outage. Instead, its relevance is as a reminder of *the need for* resilient and reliable 9-1-1 service. During and after a storm, and in any emergency or disaster, the loss of the public's ability to contact emergency responders is most profoundly felt. Families in darkened homes crushed by fallen trees, motorists unable to get through roadways blocked by downed electric power lines, elderly residents in care facilities without power in temperatures over 90 degrees, and any other citizens in need of emergency services must be able to call 9-1-1 to seek assistance.

V. BOTH IMMEDIATE AND LONG-TERM SYSTEMIC IMPROVEMENTS ARE NEEDED TO MAKE VERIZON'S 9-1-1 SERVICE MORE RESILIENT AND RELIABLE.

A. Fairfax County Recommends Improvements Based on "Best Practices" Identified by the Network Reliability and Interoperability Council.

In addition to this inquiry by the Commission, the derecho-related outage has prompted at least two other government inquiries. The Virginia State Corporation Commission ("SCC")

[43] Exhibit 6.

[44] Exhibit 4.

issued an Order Establishing Investigation on July 3, 2012.[45] The Board of Directors of the Metropolitan Washington Council of Governments ("MWCOG") adopted a Resolution on July 11, 2012, directing its technical and other committees with expertise in 9-1-1 service, telecommunications, and related matters to conduct a review and provide a report about the outage.[46] However, the need for certain improvements is already obvious. These recommendations are explained in detail in succeeding sections.

The recommendations herein are derived from Best Practices identified by the Network Reliability and Interoperability Council ("NRIC")[47] that directly bear on Verizon's 9-1-1 service.[48] A summary of those Best Practices, color-coded into categories for power, network diversity, network redundancy, and improved communication, is attached in the Appendix. Each

[45] Case No. PUC 2012-00042. The Order is available through http://docket.scc.state.va.us/CyberDocs/quickstart.asp?SHOW=view:124539&guest=Y&library=CASEWEBP_LIB&noframes.

[46] Resolution To Encourage Steps To Address Verizon 9-1-1 Service Gaps During And Following The Derecho Storm On June 29, 2012, attached as Exhibit 7. The MWCOG comprises the District of Columbia, the Cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park, and the Counties of Arlington, Fairfax, Loudoun, and Prince William in Virginia; the Cities of Bladensburg, Bowie, College Park, Frederick, Gaithersburg, Greenbelt, Rockville, and Takoma Park, and the Counties of Charles, Frederick, Montgomery, and Prince George's in Maryland.

[47] The Commission established the NRIC "to provide recommendations to the Commission and to the communications industry that, if implemented, shall under all reasonably foreseeable circumstances assure optimal reliability and interoperability of wireless, wireline, satellite, cable, and public data networks." Among its specific missions, the NRIC was to study the causes of service outages and to develop recommendations to reduce their number and their effects on citizens. Charter of the Network Reliability and Interoperability Council – VII, http://www.nric.org/charter_vii/NRICVII_Charter_FINAL_Amended_2004_3_12_04.pdf.

[48] Other NRIC Best Practices may also be beneficial for Verizon to adopt, but they are outside the scope of the County's recommendations. The complete list is at https://www.fcc.gov/nors/outage/bestpractice/BestPractice.cfm.

of the recommendations includes a cross-reference table binding the recommendation to the NRIC Best Practices that most closely support the recommendation.

Verizon may already be implementing some of these Best Practices. Some Best Practices may need fresh implementation or reaffirmation in Verizon's Standard Operating Procedures. Fairfax County recommends that Verizon closely review all of the appended Best Practices against its Standard Operating Procedures and perform a gap analysis, and that the Commission review Verizon's analysis. Verizon should consider retaining an independent party to participate to ensure a dispassionate analysis that might see problems that an internal Verizon team might overlook.

B. Verizon Should Implement Five Changes Immediately to Improve 9-1-1 Service in the Metropolitan Washington, D.C., Area.

In the immediate aftermath of the derecho, the Directors of the 9-1-1 Call Centers for the member jurisdictions of the MWCOG and the 9-1-1 Call Center for Stafford County, Virginia, agreed upon five measures that Verizon should implement right away to improve 9-1-1 service in the Washington, D.C., area immediately.[49] These five recommendations apply to all PSAPs in the metropolitan area regardless of their size. These recommendations are independent of the inquiry still underway pursuant to the July 11, 2012, Resolution adopted by the MWCOG Board of Directors. Fairfax County conveyed these recommendations to Verizon on July 11, 2012.[50] Verizon provided partial responses in the August 13 *Verizon Report*.

[49] The 9-1-1 Directors for the Northern Virginia member jurisdictions and for Stafford County, Virginia, developed and approved these five recommendations on July 2, 2012. At the first post-outage meeting of the MWCOG 9-1-1 Directors on August 3, 2012, the MWCOG 9-1-1 Directors agreed to the recommendations as well. Souder Declaration, Exhibit 1, at ¶ 22.

[50] Souder Declaration, Exhibit 1, at ¶ 22.

i. Recommendation 1 - Improve Management Control and Communication of Active Incidents.

Verizon should adopt and utilize the National Incident Management System ("NIMS") model to address and mitigate all significant events impacting the provision of 9-1-1 service to Washington-area jurisdictions. NIMS is a comprehensive, national approach to incident management that is applicable at all jurisdictional levels and across functional disciplines. NIMS enables parties to work together to prevent, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment.[51]

The benefits of NIMS include:

- A standardized approach to incident management that is scalable and flexible
- Enhanced cooperation and interoperability among responders
- Comprehensive all-hazards preparedness
- Efficient resource coordination among jurisdictions or organizations
- Integration of best practices and lessons learned for continuous improvement

Using NIMS will help Verizon to communicate the status of the situation to all involved parties early and often in any incident in a structured manner, even though the information available early on is often unclear and confusing. An additional goal of utilizing this process is to ensure that information is distributed in a vertical and horizontal manner across the region so that adjoining or nearby jurisdictions understand the "big picture" of the unfolding event. Verizon should communicate issues that cross jurisdictional boundaries so that PSAPs can understand and evaluate the impacts and formulate plans to mitigate or control unplanned effects from an action implemented in an adjoining jurisdiction (whether by Verizon or another PSAP).

The NRIC Best Practices related to this recommendation are set out in the Appendix and referenced in the table below.

[51] NIMS is more fully explained at http://www.fema.gov/national-incident-management-system.

#1 - Improve Management Control and Communication of Active Incidents			
Related NRIC Industry Best Practices			
8-8-8068	8-7-1011	8-7-5127	8-7-5275
8-7-1001	8-7-1010	8-7-0579	8-7-0780
8-6-1038	8-7-1052	8-8-0599	-

The *Verizon Report* says that the company has its own Incident Management System, but did not choose to employ it in the case of the derecho. According to the *Verizon Report,* thresholds for invoking its system have been strengthened internally, but the company has not shared any details on those thresholds.[52] More information is needed to determine whether Verizon's Incident Management System and its thresholds for activating that system meet NRIC Best Practices standards.

ii. Recommendation 2 - Provide an Active Notification System for Incidents.

Verizon should obtain and utilize a Reverse 911®-type system to notify, via voice and text, those persons identified by the Washington-area jurisdictions as soon as Verizon knows or suspects that 9-1-1 service to any or all of these jurisdictions is or may be interrupted. The voice and text messages should explain, in plain language:

- The nature of the problem
- The current or potential impact of the problem
- What Verizon is doing to address the problem
- The anticipated duration of the problem
- Recommended actions the impacted 9-1-1 center(s) should take
- Other appropriate information
- The name of the sender, the telephone numbers (business and mobile) at which the sender can be reached, and his or her email address

The NRIC Best Practices related to this recommendation are set out in the Appendix and referenced in the table below.

[52] *Verizon Report* at 7-8.

#2 - Provide an Active Notification System for Incidents			
Related NRIC Industry Best Practices			
8-8-8068	8-7-1011	8-7-5127	8-7-5275
8-7-1001	8-7-1010	8-7-0579	8-7-0780
8-6-1038	8-7-1052	8-8-0599	-

The *Verizon Report* suggests several possible improvements in the company's practices, but it falls short of adopting the full recommendation provided above.[53]

iii. Recommendation 3 - Perform Drills to Simulate 9-1-1 Outage Contingencies.

Verizon should work with the Washington-area jurisdictions to develop, by no later than December 31, 2012, a method to conduct a drill semi-annually with each jurisdiction on actions that Verizon and the affected jurisdiction(s) should take in the event of a potential or actual 9-1-1 outage.

This recommendation seeks to implement NRIC Best Practice 8-7-0579, which advises that network operators, service providers, 9-1-1 administrators, and public safety agencies should routinely team to develop, implement, periodically test, evaluate and update as needed plans for 9-1-1 disruption contingencies.

The NRIC Best Practices related to this recommendation are set out in the Appendix and referenced in the table below.

#3 - Perform Drills to Simulate 9-1-1 Outage Contingencies			
Related NRIC Industry Best Practices			
8-7-0579	8-8-8068	8-7-5127	8-7-5275
8-7-1001	8-7-1010	8-7-1011	8-7-0780
8-6-1038	8-7-1052	8-8-0599	-

[53] *Verizon Report* at 8.

The *Verizon Report* states that the company will develop "procedures" for drills, but it is unclear whether Verizon is committing to carry out such drills in cooperation with affected jurisdictions.[54]

iv. Recommendation 4 - Provide Monthly Updates to Key Contact Lists.

During the first week of each month, Verizon should provide the Washington-area jurisdictions a current contact list that contains the name and contact information (email, business telephone number, business mobile telephone number and any other appropriate information) of the Verizon account manager assigned to the jurisdiction and four immediately escalating Verizon personnel up to a Vice-President level.

The NRIC Best Practices related to this recommendation are set out in the Appendix and referenced in the table below.

# 4 - Provide Monthly Updates to Key Contact Lists			
Related NRIC Industry Best Practices			
8-7-1011	8-7-1001	8-7-1010	8-7-0579
8-7-0780	-	-	-

The *Verizon Report* states that Verizon will provide a draft by August 17.[55] The County will review this draft when Verizon makes it available.

v. Recommendation 5 - Provide On-Site Verizon Representative at Emergency Operations Centers.

If requested by any Washington-area jurisdiction, Verizon should designate a representative with authority to act on behalf of the company to be present at the jurisdiction's Emergency Operations Center ("EOC"). An onsite representative with command authority would reduce delays in the decision-making cycle and provide the jurisdiction with current,

[54] *Verizon Report* at 8.

[55] *Verizon Report* at 8.

accurate information about 9-1-1 service and outages and other telephone service issues. Onsite representation maximizes the ability to coordinate with other parties staffing the EOC.

The NRIC Best Practices related to this recommendation are set out in the Appendix and referenced in the table below.

#5 –Provide On-site Representative at EOC			
Related NRIC Industry Best Practices			
8-7-1011	8-8-8068	8-7-5127	8-7-5275
8-7-1001	8-7-1010	8-7-0579	8-7-0780
8-6-1038	8-7-1052	8-8-0599	-

The company expresses a willingness in the *Verizon Report* to "work with the 911 Directors to explore ways in which we can accommodate this request," but it avoids committing to the basic requirement of having a responsible Verizon representative on-site in an emergency. Verizon's only specific statement (other than a reference to discussions about joint training) is that "[w]e have discussed options for virtual participation in any EOC via an 'instant messaging-like' application," which is a far different matter.[56]

The string of 9-1-1 failures over the past several years shows that Verizon cannot be relied upon to diagnose and cure its own problems unassisted. PSAPs have a vital stake in the provision of 9-1-1 service and need to have a voice in Verizon's remedial measures. For example, Verizon's "audits"[57] should be conducted in conjunction with relevant public safety agencies, so that the benefit of their input can be taken into account, not conducted in private by Verizon alone. The Commission should oversee the process and ensure that Verizon's remedial measures are adequate to prevent another 9-1-1 failure.

[56] *Verizon Report* at 9.

[57] *Verizon Report* at 5.

C. Verizon Should Implement Systemic Changes to Provide the Residents of the Metropolitan Washington, D.C., Area with Reliable Access to 9-1-1 Service.

In Comments it filed in this proceeding last year, Verizon quoted its former Chief Executive Officer, Ivan Seidenberg, as acknowledging that "[Verizon's] job is to make certain [its] networks are safe and reliable enough for the security of our nation – and our world – to depend on."[58] Fairfax County agrees. For that reason, in addition to the five recommendations adopted by the MWCOG and Stafford County 9-1-1 Directors, Fairfax County recommends that Verizon evaluate two broader categories of its operational systems and procedures and provide information to the Commission, Verizon's Washington-area 9-1-1 customers, and the public about how Verizon can improve 9-1-1 service over the longer term.

i. Verizon Needs to Ensure That Washington-Area Residents Have Reliable Access to 9-1-1 Regardless of Natural or Human-Caused Disasters.

The complete failure of Verizon's 9-1-1 service speaks for itself. Whatever measures Verizon may have taken to date are not sufficient and Verizon must do more to make its network more reliable.

The County urges the Commission to require Verizon to identify what elements of its network are mission-critical facilities for 9-1-1 service and explain how Verizon intends to provide the necessary degree of reliability for these mission-critical facilities.

Backup power for key facilities is one mission-critical element.[59] It is already clear that Verizon does not have enough generators or the appropriate capacity and fail-over configuration

[58] Comments of Verizon and Verizon Wireless ("Verizon 2011 Comments"), filed July 7, 2011, at 1.

[59] Insufficient backup power was also identified as one of the main problems that caused the majority of communications network interruptions during and after Hurricane Katrina. *Report and Recommendations to the Federal Communications Commission;* Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks, June 12, 2006,

and/or procedure to back up its key facilities or redirect communications paths to functioning EO/COs. In its 2011 Comments filed in this proceeding, Verizon urged the Commission not to prescribe certain backup power best practices for carriers, contending that by prescribing specific practices the Commission would impede the flexibility carriers need to prepare for or respond to disasters.[60] If the Commission does not impose specific requirements for backup power, then Verizon should be required to articulate what it considers best practices and explain how and when it will implement them. Significantly, the *Verizon Report* says very little about improving and increasing backup power sources themselves – the key element of Verizon's failures in the derecho. The report speaks in general terms about power audits Verizon will conduct in Verizon facilities supporting 9-1-1 to identify corrective measures. The public's need to have reliable 9-1-1 service demands that Verizon take meaningful corrective action to its backup power facilities. As an example, Verizon should be required to evaluate whether it needs to provide fault-tolerant power at its mission-critical facilities, similar to what the Telecommunications Industry Association has described in its Telecommunications Infrastructure Standard for Data Centers TIA-942, and whether those facilities meet that standard today.[61]

Verizon has represented that the redundancy and other protective measures it has engineered into its networks makes them more resistant to the impact of local weather emergencies and disasters and allows Verizon to restore its networks more quickly in the event of an outage.[62] Verizon must provide more than general assurances. It must demonstrate to the

---

("*Katrina Panel Report*") at 13-14, available at http://transition.fcc.gov/pshs/docs/advisory/hkip/karrp.pdf.

[60] Verizon 2011 Comments at 13-17.

[61] See http://tiaonline.org/node/773.

[62] Verizon 2011 Comments at 2; see also *Verizon Report* at 1.

Commission and 9-1-1 providers that Verizon has sufficient functional redundancy and geographic routing diversity from its transport network to individual PSAPs.[63] Verizon has understandable proprietary and security concerns about general disclosure of sensitive information, but the Commission, 9-1-1 providers, and the public must have more information and assurance that Verizon will provide reliable 9-1-1 service.

Verizon should publicly identify its risk tolerance policy related to its backup and recovery capabilities for 9-1-1 service. Verizon also should critically review its operational practices and Continuity of Operations and Disaster Recovery plans, which should be tested routinely.

Verizon also should be required to explain how it intends to ensure human intervention when automatic fail-overs do not work. At a crucial point after the derecho, telemetry data was not available to the remote Network Operations Center. It appears that Verizon did not have an adequate plan to dispatch trained technicians to respond onsite to mission-critical facilities to diagnose the problem. When the batteries in the Arlington central office were being depleted due to generator failures and the generators were not immediately repaired, why was there a delay in deploying additional resources to remedy the situation before the Arlington facility went dark? Some of the damage to Verizon's telemetry equipment may have been avoided if knowledgeable personnel had been present at the Arlington and Fairfax central offices to power down equipment gracefully.[64]

---

[63] The Katrina Panel also made recommendations about the need for sufficient diversity for 9-1-1 circuits. *Katrina Panel Report* at 39.

[64] The *Verizon Report* says that the company plans to post better directions for its personnel to follow in the event of an emergency. *Verizon Report* at 5. A good deal more detail will be needed to determine what other measures are necessary to ensure that adequate personnel and equipment are directed promptly to affected sites.

NRIC Best Practices related to this recommendation are set out in the Appendix and referenced in the table below.

Establish Reliable Access to 9-1-1 Regardless of Natural or Human-Caused Disasters			
Related NRIC Industry Best Practices			
8-7-0650	8-7-5058	8-6-1017	8-7-0652
8-7-0657	8-7-5204	8-7-0495	8-7-0492
8-7-1033	8-7-0651	8-7-0662	8-7-5203
8-7-5206	8-7-5207	8-7-1028	8-7-0493
8-7-5232	8-7-0499	8-7-0634	8-7-0658
8-7-5214	8-7-0695	8-7-0679	8-6-5231
8-7-0622	8-7-0773	8-7-0699	8-7-5076
8-8-0674	8-8-0787	8-5-0620	8-7-1029
8-7-0690	8-8-0799	8-6-0761	8-7-0689
8-7-0580	8-7-0510	8-7-1023	8-7-1050
8-7-5113	8-7-1034	8-7-0532	8-7-5242
8-7-0547	8-7-0504	8-7-0422	8-7-0496
8-7-0421	8-7-1065	8-7-0571	8-7-0573
8-7-0566	8-7-0577	8-7-0402	8-7-0546
8-7-0568	8-6-5250	8-7-0549	8-7-5079
8-7-0488	8-8-0567	-	-

ii. Verizon Must Establish Alternative Methods of Communication For Critical Verizon Personnel to Reach PSAP Personnel During Incidents.

This recommendation expands upon the first two short-term recommendations made above. Due to the effect of the derecho on carriers' networks, service to wireless and wireline phones was limited and sporadic, which compounded an already existing cloud of confusion as to the specific nature of the incident and its impact on the 9-1-1 network. Verizon must provide its key situation-incident personnel with radios, satellite phones, or other alternative communication capabilities to allow ongoing voice contact with PSAP personnel to enable a free flow of communication as the incident develops. In addition, Verizon should implement a more robust way of notifying PSAP personnel beyond sending an email to a PSAP inbox. Alternative means of sending an understandable situation report message, such as broadcasting a fax

message to PSAPs or sending text messages to key PSAP personnel, should be considered, especially when an incident occurs out of normal working hours.[65]

The intent of this recommendation is to implement NRIC Best Practice 8-7-1011 which states: "Network Operators, Service Providers, Equipment Suppliers and Public Safety Authorities should establish alternative methods of communication for critical personnel." Verizon should identify and use communication methods that will ensure that PSAP personnel are fully aware via an active messaging stream rather than just a passive stream (such as email) that an incident of critical or high importance has developed. The content of the message must be concise and explain the situation in understandable terms, as described in Recommendation 2 above.

Additional NRIC Best Practices related to this recommendation category are set out in the Appendix and referenced in the table below.

Establish Alternative Methods of Communication to Reach PSAP Personnel During Incidents			
Related NRIC Industry Best Practices			
8-7-1011	8-8-8068	8-7-5127	8-7-5275
8-7-1001	8-7-1010	8-7-0579	8-7-0780
8-6-1038	8-7-1052	8-8-0599	-

VI. CONCLUSION

Any evaluation of the resiliency and reliability of the Nation's 9-1-1 systems and services must look at how 9-1-1 performs *in an emergency or disaster*. Verizon's 9-1-1 service in Fairfax County failed completely during the June 29, 2012, derecho. Both immediate and longer-term changes are needed to improve 9-1-1 service in the metropolitan Washington, D.C., area.

[65] The *Verizon Report* indicates that the company will implement a text message option. *Verizon Report* at 8.

Respectfully submitted,

Edward L. Long Jr.
County Executive

Edward L. Long Jr.
County Executive
12000 Government Center Parkway
Suite 552
Fairfax, Virginia 22035

Steve Souder
Director
Department of Public Safety Communications
4890 Alliance Drive
Fairfax, Virginia 22030

August 17, 2012

David P. Bobzien, County Attorney
Michael Long, Deputy County Attorney
Erin C. Ward, Assistant County Attorney
Office of the County Attorney
Fairfax County Virginia
12000 Government Center Pkwy, Suite 549
Fairfax, Virginia 20035
703-324-2421

Appendix

Appendix

Fairfax County Virginia Department of Public Safety Communications – Recommended Best Practices for Service Provider Adoption

Item	NRIC Best Prac. Number	NRIC Prty	Network Reliability and Interoperability Council (NRIC) Best Practice Summary Description
1	8-7-1011	Critical	Network Operators, Service Providers, Equipment Suppliers and Public Safety Authorities should establish alternative methods of communication for critical personnel.
2	8-8-8068	Critical	Incident Response Communications Plan: Service Providers, Network Operators, and Equipment Suppliers should develop and practice a communications plan as part of the broader Incident response plan. The communications plan should identify key players and include as many of the following items as appropriate for your organization: contact names, business telephone numbers, home tel. numbers, pager numbers, fax numbers, cell phone numbers, home addresses, internet addresses, permanent bridge numbers, etc. Notification plans should be developed prior to an event/incident happening where necessary. The plan should also include alternate communications channels such as alpha pagers, internet, satellite phones, VOIP, private lines, blackberries, etc. The value of any alternate communications method needs to be balanced against the security and information loss risks introduced.
3	8-7-5127	Critical	Network Operators, Service Providers, Equipment Suppliers and Public Safety Authorities should provide a Government Emergency Telecommunications Service (GETS) card to essential staff critical to disaster recovery efforts and should consider utilizing Wireless Priority Service (WPS) for essential staff. Appropriate training and testing in the use of GETS & WPS should occur on a regular basis (i.e. in conjunction with testing of the corporate disaster recovery plan).
4	8-7-5275	Critical	Network Operators, Service Providers and Equipment Suppliers should consider backup power capabilities for Command and Control (Crisis Teams) so that communications and access to critical systems can be maintained in the event of a significant disruption to commercial power.
5	8-7-1001	Critical	Network Operators, Service Providers, Equipment Suppliers and Property Managers should formally document their business continuity processes in a business continuity plan covering critical business functions and business partnerships. Key areas for consideration include: Plan Scope, Responsibility, Risk Assessment, Business Impact Analysis, Plan Testing, Training and Plan Maintenance.
6	8-7-1010	Critical	Network Operators, Service Providers and Equipment Suppliers should designate personnel responsible for maintaining Business Continuity and Disaster Recovery Plans.

Best Practice (BP) Descriptions were shaded with a category color by Fairfax County for easier reference- BPs can overlap multiple categories:

Red = Best Practice regarding power, Green = network diversity, Blue = network redundancy, Purple = improved communication

Appendix

Fairfax County Virginia Department of Public Safety Communications – Recommended Best Practices for Service Provider Adoption

Item	NRIC Best Prac. Number	NRIC Prty	Network Reliability and Interoperability Council (NRIC) Best Practice Summary Description
6	8-7-0579	Critical	Network Operators, Service Providers, and 911 administrators, and public safety agencies should routinely team to develop, implement, periodically test, evaluate and update as needed plans for 911 disruption contingencies (e.g., share information about network and system security and reliability where appropriate).
7	8-7-0780	Critical	Network Operators and Service Providers should consider including coordination information of Public Safety Authorities when developing disaster restoration and prioritization plans.
8	8-6-1038	Highly Important	Network Operators, Service Providers and Equipment Suppliers should consider during times of disaster, communicating the disaster response status frequently and consistently to all appropriate employees - so that they all understand what processes have been put in place to support customers and what priorities have been established in the response.
9	8-7-1052	Highly Important	Network Operators and Service Providers should periodically assess the functionality of business critical systems during a disaster exercise.
10	8-8-0599	Highly Important	Crisis event simulation: Network Operators and Service Providers should conduct exercises periodically to test a network's operational readiness for various types of events (e.g., hurricane, flood, nuclear, biological, and chemical), through planned, simulated exercises. The exercise should be as authentic as practical. Scripts should be prepared in advance and team members should play their roles as realistically as possible.
11	8-7-0650	Critical	Network Operators, Service Providers and Property Managers should place strong emphasis on human activities related to the operation of power systems (e.g., maintenance procedures, alarm system operation, response procedures, and training) for operations personnel.
12	8-7-5058	Critical	Back-up Power: Network Operators, Service Providers, Equipment Suppliers and Property Managers should ensure that all critical infrastructure facilities, including the security equipment, devices and appliances protecting it, are supported by backup power systems (e.g., batteries, generators, fuel cells).
13	8-6-1017	Critical	Network Operators and Service Providers should have documented plans or processes to assess damage to network elements, outside plant, facility infrastructure, etc. for implementation immediately following a disaster.

Best Practice (BP) Descriptions were shaded with a category color by Fairfax County for easier reference- BPs can overlap multiple categories:

Red = Best Practice regarding power, Green = network diversity, Blue = network redundancy, Purple = improved communication

Item	NRIC Best Prac. Number	NRIC Prty	Network Reliability and Interoperability Council (NRIC) Best Practice Summary Description
14	8-7-0652	Critical	Network Operators, Service Providers, Equipment Suppliers and Property Managers should adhere to the following applicable power engineering design standards; Telcordia GR-513-CORE (Power - LSSGR section 13), Telcordia GR-63-CORE (NEBS), Telcordia GR-295-CORE (Isolated Ground Planes), Telcordia GR-1089-CORE (Electromagnetic Compatibility), and ANSI T1.311 (DC power Systems).
15	8-7-0657	Critical	Network Operators, Service Providers and Property Managers should design standby generator systems for fully automatic operation and for ease of manual operation, when required.
16	8-7-5204	Critical	Service Providers, Network Operators and Property Managers should ensure availability of emergency/backup power (e.g., batteries, generators, fuel cells) to maintain critical communications services during times of commercial power failures, including natural and manmade occurrences (e.g., earthquakes, floods, fires, power brown/black outs, terrorism). The emergency/backup power generators should be located onsite, when appropriate.
17	8-7-0495	Critical	Network Operators and Property Managers should consider pre-arranging contact information and access to restoral information with local power companies.
18	8-7-0492	Critical	Network Operators should provide back-up power (e.g., some combination of batteries, generator, fuel cells) at cell sites and remote equipment locations, consistent with the site specific constraints, criticality of the site, the expected load and reliability of primary power.
19	8-7-1033	Critical	Network Operators should develop a strategy for deployment of emergency mobile assets such as Cell on Wheels (COWs), cellular repeaters, Switch on Wheels (SOWs), transportable satellite terminals, microwave equipment, power generators, HVAC units, etc. for emergency use or service augmentation for planned events (e.g., National Special Security Event (NSSE)).

Best Practice (BP) Descriptions were shaded with a category color by Fairfax County for easier reference- BPs can overlap multiple categories:
Red = Best Practice regarding power, Green = network diversity, Blue = network redundancy, Purple = improved communication

Item	NRIC Best Prac. Number	NRIC Prty	Network Reliability and Interoperability Council (NRIC) Best Practice Summary Description
20	8-7-0651	Critical	Network Operators, Service Providers and Property Managers should consider providing diversity within power supply and distribution systems so that single point failures (SPOF) are not catastrophic. For large battery plants in critical offices, consider providing dual AC feeds (odd/even power service cabinets for rectifiers). Transfer switches should be listed to a UL standard for Transfer Switch Equipment. When transfer breaker systems are used, they must be mechanically and electrically interlocked.
21	8-7-0662	Critical	Network Operators, Service Providers and Property Managers should exercise power generators on a routine schedule in accordance with manufacturer's specifications. For example, a monthly 1 hour engine run on load, and a 5 hour annual run.
22	8-7-5203	Critical	Network Operators, Service Providers, and Property Managers should develop, maintain and administer a comprehensive program to sustain a reliable power infrastructure.
23	8-7-5206	Critical	Network Operators, Service Providers and Property Managers should maintain sufficient fuel supplies for emergency/backup power generators running at full load to allow for contracted refueling.
24	8-7-5207	Critical	Network Operators, Service Providers and Property Managers should take appropriate precautions to ensure that fuel supplies and alternate sources of power are available for critical installations in the event of major disruptions in a geographic area (e.g., hurricane, earthquake, pipeline disruption). Consider contingency contracts in advance with clear terms and conditions (e.g., Delivery time commitments, T&Cs).
25	8-7-1028	Critical	Network Operators, Service Providers and Property Managers should engage in preventative maintenance programs for network site support systems including emergency power generators, UPS, DC plant (including batteries), HVAC units, and fire suppression systems.
26	8-7-0493	Critical	Network Operators and Property Managers should consider placing fixed power generators at cell sites, where feasible.
27	8-7-5232	Critical	Network Operators, Service Providers, and Property Managers should test fuel reserves used for standby or backup power for contamination at least once a year or after any event (e.g., earth tremor, flood) that could compromise the integrity of the tank housing, fill pipe or supply pipe.

Best Practice (BP) Descriptions were shaded with a category color by Fairfax County for easier reference- BPs can overlap multiple categories:
Red = Best Practice regarding power, Green = network diversity, Blue = network redundancy, Purple = improved communication

Appendix

Fairfax County Virginia Department of Public Safety Communications – Recommended Best Practices for Service Provider Adoption

Item	NRIC Best Prac. Number	NRIC Prty	Network Reliability and Interoperability Council (NRIC) Best Practice Summary Description
28	8-7-0499	Critical	Network Operators and Service Providers should consider ensuring that the back-haul facility equipment located at the cell site is provided with backup power duration is equal to that provided for the other equipment at the cell site.
29	8-7-0634	Critical	Network Operators, Service Providers and Property Managers together with the Power Company and other tenants in the location, should verify that aerial power lines are not in conflict with hazards that could produce a loss of service during high winds or icy conditions.
30	8-7-0658	Critical	Network Operators, Service Providers and Property Managers should maintain adequate fuel on-site and have a well-defined re-supply plan. Generator life support systems (e.g., radiator fan, oil cooler fan, water transfer pumps, fuel pumps, engine start battery chargers) should be on the essential AC bus of the generator they serve.
31	8-7-5214	Highly Important	Network Operators, Service Providers and Property Managers should consider placing all power and network equipment in a location to increase reliability in case of disaster (e.g., floods, broken water mains, fuel spillage). In storm surge areas, consider placing all power related equipment above the highest predicted or recorded storm surge levels.
32	8-7-0695	Highly Important	Network Operators, Service Providers and Property Managers should develop and test plans to address situations where normal power backup does not work (e.g., commercial AC power fails, the standby generator fails to start, automatic transfer switch fails).
33	8-7-0679	Highly Important	"Network Operators, Service Providers and Equipment Suppliers should provide diverse power feeds for all redundant links (e.g., SS7, BITS clocks) and any components identified as "critical" single points of failure (SPOF) in transport and operations of the network."
34	8-6-5231	Highly Important	Network Operators, Service Providers, Equipment Suppliers and Property Managers should develop documentation for the restoration of power for areas of critical infrastructure including such things as contact information, escalation procedures, restoration steps and alternate means of communication. This documentation should be maintained both on-site and at centralized control centers.

Best Practice (BP) Descriptions were shaded with a category color by Fairfax County for easier reference- BPs can overlap multiple categories:

Red = Best Practice regarding power, Green = network diversity, Blue = network redundancy, Purple = improved communication

Appendix

Fairfax County Virginia Department of Public Safety Communications – Recommended Best Practices for Service Provider Adoption

Item	NRIC Best Prac. Number	NRIC Prty	Network Reliability and Interoperability Council (NRIC) Best Practice Summary Description
35	8-7-0622	Highly Important	"Network Operators, Service Providers, and Property Managers should use ANSI T1.311-1998 " Standard for Telecommunications Environmental Protection, DC Power Systems" for key equipment locations (e.g., routers, central office switches, and other critical network elements) to reduce fires associated with DC power equipment."
36	8-7-0773	Highly Important	Network Operators, Service Providers and Property Managers should perform annual capacity evaluation of power equipment, and perform periodic scheduled maintenance, including power alarm testing.
37	8-7-0699	Highly Important	Network Operators, Service Providers, Equipment Suppliers and Property Managers should design standby systems (e.g., power) to withstand harsh environmental conditions.
38	8-7-5076	Highly Important	Network Operators and Service Providers should ensure and periodically review intra-office diversity of critical resources including power, timing source and signaling leads (e.g., SS7).
39	8-8-0674	Important	Smart power systems: Network Operators, Service Providers and Property Managers should initiate or continue a modernization program to ensure that outdated power equipment is phased out of plant. They should consider the capabilities of smart controllers, local and remote monitoring and control, and alarm systems when updating their power equipment. Power monitors and smart controllers should be integrated into engineering and operational strategies.
40	8-8-0787	Important	Back-Up Power Fuel Supply: Network Operators, Service Providers, and Property Managers should consider the use of fixed alternate fuel generators (e.g., natural gas) connected to public utility supplies to reduce the strain on refueling.
41	8-5-0620	Important	Equipment Supplier's should endeavor to meet requirements outlined in the GR-63 01 Network Equipment-Building System (NEBS) Requirements for Power and Communication Cables (e.g., power, fire, temperature, humidity, vibration).
42	8-7-1029	Important	Network Operators and Service Providers should periodically review their portable power generator needs to address changes to the business.

Best Practice (BP) Descriptions were shaded with a category color by Fairfax County for easier reference- BPs can overlap multiple categories:

Red = Best Practice regarding power, Green = network diversity, Blue = network redundancy, Purple = improved communication

Appendix

Fairfax County Virginia Department of Public Safety Communications – Recommended Best Practices for Service Provider Adoption

Item	NRIC Best Prac. Number	NRIC Prty	Network Reliability and Interoperability Council (NRIC) Best Practice Summary Description
43	8-7-0690	Important	Network Operators and Property Managers should consider providing power alarm redundancy so that no single point alarm system failure will lead to a network power outage.
44	8-8-0799	Important	Cell Site & Remote Location Power Backup: Service Providers, Network Operators and Property Managers should periodically evaluate the need for and feasibility of providing back up power at cell sites and remote locations taking into consideration the criticality of the site or location, as well as local zoning laws, statutes, and contractual obligations.
45	8-6-0761	Important	Network Operators and Service Providers should conduct periodic verification of the office synchronization plan and the diversity of timing links, power feeds and alarms.
46	8-7-0689	Important	Network Operators and Service Providers should provide a separate "battery discharge" alarm for all critical infrastructure facilities, and where feasible, periodically (e.g., every 15 minutes) repeat the alarm as long as the condition exists."
47	8-7-0580	Critical	Network Operators and Public Safety Authorities should apply redundancy and diversity (e.g., concepts set forth in Best Practices 0566, 0573), where feasible, to other network links considered vital to a community's ability to respond to emergencies. An order for these links would be placed by the Public Safety Authority. Security practices and concepts should be applied to the critical systems supporting Link Redundancy and Diversity.
48	8-7-0510	Critical	Network Operators, Service Providers and Equipment Suppliers should, by design and practice, manage critical Network Elements (e.g., Domain Name Servers, Signaling Servers) that are essential for network connectivity and subscriber service as critical systems (e.g., secure, redundant, alternative routing).
49	8-7-1023	Critical	Network Operators, Service Providers and Equipment Suppliers should identify essential staff within their organizations that are critical to disaster recovery efforts. Planning should address the availability of these individuals and provide for backup staff.
50	8-7-1050	Critical	"Network Operators and Service Providers should consider tertiary carrier/transport methods such as satellite, microwave or wireless to further reduce point of failures or as "hot transport" backup facilities."

Best Practice (BP) Descriptions were shaded with a category color by Fairfax County for easier reference- BPs can overlap multiple categories:

Red = Best Practice regarding power, Green = network diversity, Blue = network redundancy, Purple = improved communication

Appendix

Fairfax County Virginia Department of Public Safety Communications – Recommended Best Practices for Service Provider Adoption

Item	NRIC Best Prac. Number	NRIC Prty	Network Reliability and Interoperability Council (NRIC) Best Practice Summary Description
51	8-7-5113	Critical	Network Operators, Service Providers and Property Managers, when feasible, should provide multiple cable entry points at critical facilities (e.g., copper or fiber conduit) avoiding single points of failure (SPOF).
52	8-7-1034	Critical	Network Operators should ensure that the emergency mobile assets are maintained at a hardware and software level compatible with the existing network infrastructure so that the emergency mobile assets will be immediately available for deployment.
53	8-7-0532	Highly Important	Diversity Audit: Network Operators should periodically audit the physical and logical diversity called for by network design and take appropriate measures as needed.
54	8-7-5242	Highly Important	Network Operators, Service Providers and Equipment Suppliers should reassess the criticality of associated facilities following a catastrophic incident (i.e. loss of one facility may make others more critical).
55	8-7-0547	Highly Important	Network Operators and Service Providers should place critical network databases (e.g., directory server, feature server, Service Control Point (SCP)) in a secure environment across distributed locations to provide service assurance (e.g., maintainability, connectivity, security, reliability) consistent with other critical network elements.
56	8-7-0504	Highly Important	"Network Operators and Service Providers, in order to facilitate asset management and increase the likelihood of having usable spares in emergency restorations, should consider maintaining "hot spares" (circuit packs electronically plugged in and interfacing with any element management system, as opposed to being stored in a cabinet) for mission critical elements."
57	8-7-0422	Highly Important	Failure Data Collection and Review: Network Operators should collect failure-related data and perform cause analysis, impact and criticality analysis and failure trending. Network Operators and Equipment Suppliers should work together to jointly perform this analysis, and meet periodically with the specific agenda of sharing the failure and outage information to develop corrective measures.
58	8-7-0496	Highly Important	Network Operators and Property Managers should consider storing their portable generators at critical sites that are not otherwise equipped with stationary generators.

Best Practice (BP) Descriptions were shaded with a category color by Fairfax County for easier reference- BPs can overlap multiple categories:

Red = Best Practice regarding power, Green = network diversity, Blue = network redundancy, Purple = improved communication

Item	NRIC Best Prac. Number	NRIC Prty	Network Reliability and Interoperability Council (NRIC) Best Practice Summary Description
59	8-7-0421	Highly Important	Fast Failover of Redundancies: Equipment Suppliers should design network elements intended for critical hardware and software recovery mechanisms to minimize restoration times.
60	8-7-1065	Important	Network Operators and Service Providers should identify and manage critical network elements and architecture that are essential for network connectivity and subscriber services considering security, functional redundancy and geographical diversity.
61	8-7-0571	Critical	Network Operators should consider deploying dual active 911 selective router architectures to enable circuits from the caller's serving end office to be split between two selective routers in order to eliminate single points of failure (SPOF). Diversity should also be considered on interoffice transport facilities connecting each 911 selective router to the PSAP serving end office.
62	8-7-0573	Critical	Network Operators, Service Providers and Public Safety Authorities, should consider providing local loop diversity to the PSAP including the use of alternate technologies, (e.g., wireless, broadband). PSAPs should consider the availability of diverse local loop connections in the site selection for new PSAP facilities.
63	8-7-0566	Critical	Network Operators and Service Providers should consider placing and maintaining 911 circuits over diverse interoffice transport facilities (e.g., geographically diverse facility routes, automatically invoked standby routing, diverse digital cross-connect system services, self-healing fiber ring topologies, or any combination thereof).
64	8-7-0577	Critical	Network Operators, Service Providers and Public Safety Agencies responsible for PSAP operations should jointly and periodically test and verify that critical components (e.g., automatic re-routes, PSAP Make Busy keys) included in contingency plans work as designed.
65	8-7-0402	Critical	Single Point of Failure: Network Operators and Service Providers should, where appropriate, design networks to minimize the impact of a single point of failure (SPOF).
66	8-7-0546	Critical	Network Operators and Service Providers should minimize single points of failure (SPOF) in paths linking network elements deemed critical to the operations of a network (with this design, two or more simultaneous failures or errors need to occur at the same time to cause a service interruption).

Best Practice (BP) Descriptions were shaded with a category color by Fairfax County for easier reference- BPs can overlap multiple categories:
Red = Best Practice regarding power, Green = network diversity, Blue = network redundancy, Purple = improved communication

Item	NRIC Best Prac. Number	NRIC Prty	Network Reliability and Interoperability Council (NRIC) Best Practice Summary Description
67	8-7-0568	Critical	Network Operators and PSAPs should establish a routing plan so that in the case of a lost connection from the selective router to the PSAP, 911 calls are routed to an alternate answering point (e.g., alternate PSAP, appropriate telephone line).
68	8-6-5250	Highly Important	Network Operators should consider intra-office diversity of all critical resources during restoration, and address losses of diversity following restoration.
69	8-7-0549	Highly Important	Network Operators should develop an engineering design for critical network elements and inter-office facilities that addresses diversity, and utilize management systems to provision, track and maintain that inter-office and intra-office diversity.
70	8-7-5079	Highly Important	Network Operators and Service Providers should, where feasible, provide both physical and logical diversity of critical facilities links (e.g., nodal, network element). Particular attention should be paid to telecom hotels and other concentration points.
71	8-7-0488	Important	Network Operators and Service Providers should ensure that critical wireless circuits (e.g., high priority cells, SS7 circuits, 911 circuits) are registered with Telecom Service Priority (TSP).
72	8-8-0567	Important	Network operators and service providers (of any technology type) should spread 9-1-1 access connections across similar equipment to avoid single points of failure. Network elements used for 9-1-1 should have their plug-in level components and termination points marked with a red tag (if applicable) to notify maintenance personnel that the equipment is used for critical, essential services and is to be treated with a high level of care. This service provider equipment identification applies to E9-1-1 and may apply to some elements of NG9-1-1.

Best Practice (BP) Descriptions were shaded with a category color by Fairfax County for easier reference- BPs can overlap multiple categories:
Red = Best Practice regarding power, Green = network diversity, Blue = network redundancy, Purple = improved communication

Exhibit 1

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Reliability and Continuity of Communications Networks, Including Broadband Technologies 9-1-1 Resiliency and Reliability in Wake of June 29, 2012, Derecho Storm in Central, Mid-Atlantic, and Northeastern United States	PS Docket No. 11-60

DECLARATION OF STEVE SOUDER

I, Steve Souder, declare as follows:

1. I have been the director of the Department of Public Safety Communications ("DPSC") for Fairfax County, Virginia, since 2005. DPSC operates the County's 9-1-1 Call Center (Public Safety Answering Point or "PSAP") and dispatches for the County's Police Department and Fire and Rescue Department. DPSC and the 9-1-1 Call Center are located at 4890 Alliance Drive, Fairfax, Virginia 22030. Fairfax County's 9-1-1 Call Center is the largest in the Commonwealth of Virginia and one of the ten largest in the United States. Besides the County's 1.1 million residents, the County's 9-1-1 Call Center also serves as the PSAP for the City of Fairfax, the Towns of Vienna and Herndon, and the Fort Belvoir U.S. Army base.

2. From late 2001 to 2005, I served as director of the Montgomery County, Maryland, Department of Police, 9-1-1 Emergency Communications Center, which was one of the 50 largest such centers in the country. Prior to that, I was administrator of the Arlington County, Virginia, 9-1-1 Public Safety-Emergency Communications Center for over 16 years, including during the September 11, 2001, terrorist attack on the Pentagon.

3. I submit this declaration in support of the Comments of Fairfax County, Virginia. I have reviewed the Comments, I am familiar with the contents thereof and the matters referred to therein insofar as they relate to the outages of Verizon's 9-1-1 service to Fairfax County on June 30 through July 3, 2012, and on the dates in 2011 specified below. I am fully competent to testify to the facts set forth herein and, if called as a witness, would testify to them.

4. The PSAP is located in the McConnell Public Safety and Transportation Operations Center ("MPSTOC"). The MPSTOC has a 12,000-square foot operations floor equipped with 94 consoles. Seventy-two of the consoles serve the DPSC. The other consoles are used by the Virginia State Police and the Virginia Department of Transportation. The County's Emergency Operations Center is also located in the MPSTOC.

5. Forty-six of the consoles are equipped to answer 9-1-1 calls. Each of these consoles is equipped with a 9-1-1 telephony terminal, a computer-aided dispatch ("CAD") terminal with geographic information systems ("GIS") mapping and aerial photography of the entire County, and a corporate personal computer. All Public Safety Communicators are certified in emergency medical dispatch, which enables them to provide instruction to callers reporting medical emergencies. The 9-1-1 Call Center

receives approximately one million calls per year. In the month of May 2012, the PSAP received 33,514 calls through 9-1-1, and another 6,334 calls on the County's 10-digit emergency call number. The average speed to answer calls made to 9-1-1 was two seconds; the average speed to answer calls made to the 10-digit emergency number was three seconds.

6. DPSC's Public Safety Training Academy is one of only thirty-one 9-1-1 Call Centers in the country to be certified as an Association of Public Safety Communications Officials ("APCO") Project 33 Training Program. Of 6,100 PSAPs in the United States, DPSC is one of only 68 to be named as a National Center for Missing and Exploited Children 9-1-1 Call Center Partner.

7. In addition to its primary 9-1-1 Call Center, Fairfax County maintains an alternate PSAP about eight miles east of the MPSTOC. The alternate facility serves as a backup in the event the County's primary 9-1-1 Call Center should become inoperable or uninhabitable for any reason.

8. When the derecho struck Fairfax County at approximately 10:30 at night on Friday, June 29, 2012, electrical power to the 9-1-1 Call Center flickered as commercial power was lost, but the PSAP's generators instantly activated and operations continued uninterrupted.

9. In the next three and one-half hours the volume of calls received increased by 415% over the same period the previous week. Fire and Rescue dispatches increased by 2,464% when compared to the same time period the previous week, and Emergency Medical Services dispatches increased by 89%.

10. The first indication of trouble came at approximately 6:00 a.m. on Saturday, June 30, when Verizon notified the 9-1-1 Call Center, via an email and a phone call, that three of the four links that provide Automatic Location Identification ("ALI") to the PSAP were out of service. However, the 9-1-1 Call Center was still receiving ALI with 9-1-1 calls through the remaining link. The 9-1-1 Call Center notified County staff of this issue via the County's Emergency Alert Network.

11. At 6:55 a.m., Verizon sent a cryptic email to designated Fairfax County staff saying that the Arlington central office was without power or backup battery/generator. The references to Arlington suggested that 9-1-1 service was affected only in Arlington County. Without a corresponding phone call explaining the situation and the email, PSAP staff continued with their normal operations, unaware that incoming 9-1-1 call service from Verizon was about to rapidly deteriorate.

12. At 7:36 a.m., the 9-1-1 Call Center received its last 9-1-1 call. As a result of Verizon service failures, no 9-1-1 calls, ten-digit emergency calls, or non-emergency calls were routed through to the PSAP for approximately the next seven hours.

13. The PSAP immediately began the process of switching its 9-1-1 operations to its backup phone lines. DPSC officials, including me, initiated repeated calls to Verizon representatives to determine why the County was not receiving 9-1-1 calls, but we were unable to contact Verizon using wireline or wireless telephone equipment. DPSC staff concluded there might be some problem with service that was specific to the PSAP. We also attempted, unsuccessfully, to call other 9-1-1 Call Centers in the area to determine the status of their 9-1-1 service.

14. At about 9:36 a.m., I spoke to Verizon's Technical Service Manager for 9-1-1, via telephone and she told me that Verizon was having major problems, resulting in a 9-1-1 service outage.

15. By 1:00 p.m., DPSC had relocated its public safety communications staff to the County's alternate PSAP, hoping that it could receive calls there. However, we discovered that due to the Verizon equipment failure, 9-1-1 calls could not be routed to the alternate PSAP either.

16. At 3:00 p.m. on Saturday, June 30, more than seven hours after the last 9-1-1 call had come through to the County's PSAP, Verizon restored minimal and sporadic 9-1-1 service. Verizon advised the DPSC staff that 9-1-1 call routing was restored, but that the ALI data would not be transmitted due to failed Verizon equipment that was still under repair. Staff that had relocated to the County's alternate PSAP returned to the primary PSAP at the MPSTOC. The County switched from the backup phone system at MPSTOC to the primary phone system.

17. Verizon has acknowledged that even after 3:00 p.m., on Saturday, some 9-1-1 calls that entered its system were not routed to the PSAP and received a busy signal. Calls that were successfully routed to the PSAP did not have ALI. Over the next two and one-half days, 9-1-1 service remained sporadic. Full 9-1-1 service was restored in Fairfax County on Tuesday, July 3, at about 11:30 a.m.

18. DPSC staff asked Verizon for data on the number of 9-1-1 calls attempted to the County's PSAP but not completed between Saturday, June 30, and Tuesday, July 3, 2012. To date, Verizon has only provided data for the 29-hour period starting when the outage began at 7:36 a.m., on June 30 and ending at 12:30 p.m., on July 1.

According to Verizon, nearly 1,900 calls to 9-1-1 entered Verizon's system but were not routed to the County during the first 29 hours alone. The majority of those calls probably occurred during the seven-hour period when 9-1-1 service was completely down, but the data Verizon provided does not show when the calls were placed or how many callers were unable to get through to the 9-1-1 Call Center after service was partially restored. Verizon has told the County that it does not have data for the succeeding period of approximately 12 hours after 12:30 p.m., on July 1. DPSC staff has reiterated its request for the data for the remainder of the time until full service was restored on July 3.

19. Fairfax County experienced significant 9-1-1 disruptions during the snowstorm that hit the National Capital Region on January 26, 2011. Verizon subsequently advised me that switching/routing equipment misinterpreted the large number of simultaneous wireless calls as trunk/equipment failure in the PSAPs. In response, the transmitting switches automatically shut down the trunks for repair. The PSAP has twelve trunks to receive wireless 9-1-1 calls. Nine of those trunks, representing 75% of Fairfax County's capacity to receive wireless 9-1-1 calls, were automatically removed from service during one of the busiest times the PSAP had experienced in recent history.

20. On February 18, 2011, an equipment failure in Verizon's Fairfax central office intermittently affected wireless calls to 9-1-1 in Arlington and Fairfax Counties. Fairfax County notified emergency responders, the public and the media through emergency alert messages, web postings, and repeated updates to the media, and instructed residents to call a ten-digit emergency number if they had difficulty getting through to the PSAP by dialing 9-1-1.

21. On May 30, 2011, a power failure in Verizon's Newark, New Jersey, central office prevented the transmission of ALI data from some wireless 9-1-1 calls. According to Verizon, PSAPs in Maryland, Delaware, Pennsylvania and Virginia, including Fairfax County, were affected.

22. On July 2, 2012, the Directors of the Northern Virginia 9-1-1 Call Centers, including Stafford County, developed and agreed upon five measures that Verizon should implement right away to improve 9-1-1 service in the Washington, D.C., area immediately. The Metropolitan Washington Council of Governments ("MWCOG") 9-1-1 Directors agreed to the recommendations at their first post-outage meeting on August 3, 2012. I sent these recommendations to Verizon via email on July 13, 2012.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief, and that this declaration was executed on August 16, 2012.

Steve Souder

Exhibit 2

From: VSQL034INST03 [mailto:VSQL034INST03] On Behalf Of
911_CENTER_ALERT%VZNOTES@us1.ent.verizon.com
Sent: Saturday, June 30, 2012 6:55 AM
To: e911-va-fairfalex-notify-email@verizon.com
Subject: OPEN Ticket# ZFAAL-12-2000 for PSAP #ZFAAL - Fairfax and Alexandria Tandems

PSAP: Fairfax and Alexandria Tandems
Ticket #: ZFAAL-12-2000
Ticket Status: OPEN
Priority: STANDARD
Type: EMPLOYEE
Call Category: Central Office Trouble
Current Status: Call category is Central Office Trouble. per ncc says arlington co containing dms & 5ee and dms 200 switches is without power or back up battery / generator/ Bridge # established for updates : 866[redacted] pin [redacted]// main trble is caller is in area cannot call 911/ vz power tech on site at co/

Any questions please call the 9-1-1 Customer Care Center - Piscataway NJ at

(800) 773-7911

From: Davies, Cynthia L (CYNTHIA) [mailto:c.davies@verizon.com]
Sent: Saturday, June 30, 2012 10:31 AM
To: E911-VA-PSAP-Notify-Email
Subject: VERIZON OUTAGES

To All Virginia PSAPs:

Due to the recent storm activities in Virginia, Verizon is experiencing many regions with 911 outages and is working to restore services as quickly as possible. If you have not already done so, and your PSAP is experiencing 911 troubles related to your Verizon 911 network or Verizon maintained CPE, please contact the Verizon 911 Customer Care Center at 800 773 7911 to open a trouble ticket. Please expect longer than usual hold times due to the high volume of incoming traffic.

"The customer's success is our success."

Cynthia L. Davies
Verizon – Technical Service Manager 911
Global Maintenance Organization
9-1-1 Customer Care and Services
Office/Mobile:(703) 801-9076
Email: c.davies@verizon.com

Exhibit 3

Index

- Contacts/Directions
- Emergency Home Page
- Emergency Information Blog
- Stay Informed
- Prepare
- Natural Disasters/Weather
- Recover and Rebuild
- Special Needs Registry
- Health and Safety Podcast
- Business/Nonprofit ESF 15
- Publications, Links and Resources

Online Services

Our Government

News and Events

Maps, Facts & Stats

State & Federal

June 29, 2012 Derecho Storm Report

Summary

On Friday, June 29, at approximately 10 p.m., a severe thunderstorm (derecho) hit Fairfax County. Within one hour the County's Emergency Operations Center (EOC) was activated at a monitoring level. Activities were coordinated with public safety, the 9-1-1 Center and the Virginia Department of Transportation (VDOT) to determine needs and to support the response. Additional agencies were contacted overnight – including the Park Authority, Risk Management, Facilities Management, Public Schools (FCPS), Building Inspector, Public Works and Environmental Services (DPWES), among others – and put on alert about the potential for damage.

At 4 a.m. on Saturday, June 30, the EOC was deactivated since there were no indications of massive phone or massive power outage; all public safety and VDOT needs had been met and Dominion Virginia Power was reporting approximately 20,000 meters out of service at the time. Public safety agencies were also back to a normal response activity.

Once daylight arrived and damage began being reported, the EOC was re-activated at 9:30 a.m. Almost all communications were affected, including 9-1-1 service. The media was notified about the issues with 9-1-1 service and to direct all emergencies to public safety stations. Power outages were over 230,000 across the county or approximately 55 percent of the county's meters.

During the duration of the recovery efforts, the EOC was staffed 24/7 from Saturday, June 30, through 8 p.m. Monday, July 2. The EOC was operational on Tuesday, July 3, staffing a 12-hour operational period, 6 a.m. to 6 p.m.; 11 a.m. to midnight on Wednesday, July 4; 8 a.m. to 5 p.m. on Thursday, July 5; and 8 a.m. to 5 p.m. on Friday, July 6. The OEM duty officer provided monitoring and actions as needed during the overnight hours when the EOC was not activated.

On Saturday, June 30, over 50 Fairfax County Public School sites were without power; over 120 traffic intersections were without power; several public safety facilities were without electricity, including fire stations in Annandale, Lorton and Great Falls and the Reston and McLean Police Stations. During the height of the storm the Fairfax County Fire and Rescue Department had deployed approximately 78 percent of its resources.

The County has 63 wastewater pumping stations. Of these, 40 stations lost power on June 30. The pumping stations have multiple pumps within each station, anywhere from two to four actual pumps per station. If the power is out, all pumps shut off until the diesel generator (at each station) kicks in and pumping resumes. All 63 wastewater pumping stations lost SCADA (Supervisory Control and Data Acquisition) system communications during this storm, which is how County personnel can remotely monitor the wastewater pumping station operations.

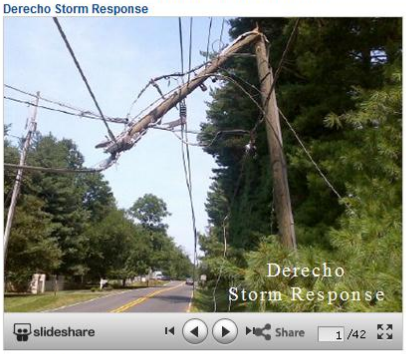
On Saturday, June 30, at 11 a.m., both a local emergency declaration and a Virginia state of emergency were declared. Governor Robert (Bob) F. McDonnell and Fairfax County Board of Supervisors Chairman Sharon Bulova attended an operational briefing in the EOC. Also attending were Virginia Secretary of Public Safety Marla Decker and Secretary of Health and Human Services William A. Hazel Jr., MD. Following the briefing, the Governor and Chairman conducted a media briefing in the lobby of the McConnell Public Safety and Transportation Operations Center (MPSTOC) facility to get the word to the media, for distribution to the public, about the situation.

In addition to extreme power outages throughout Fairfax County and the National Capital Region and high heat, the Falls Church Water Utilityissued a boil water advisory late on Saturday, June 30, advising water customers in **portions of Tysons Corner, Vienna, Dunn Loring and Merrifield to use boiled tap water or bottled water for drinking and cooking purposes as a safety precaution;** customers were advised not to drink tap water without boiling it first. There were no issues or boil water advisory needed for Fairfax Water.

For the event (June 29-July 6), there were four reported deaths in Fairfax County (two fatalities from the storm; the additional two were patients transported to Fairfax hospitals from outside our jurisdiction). There has been one heat-related death in Fairfax County according to the Virginia Department of Health. At this time it is unknown if this is related to the storm (reporting period began June 20). The Virginia Office of the Chief Medical Examiner has also reported that since June 20, there have been 10 heat-related fatalities statewide.

Presentation to the Board of Supervisors

Derecho Storm Response

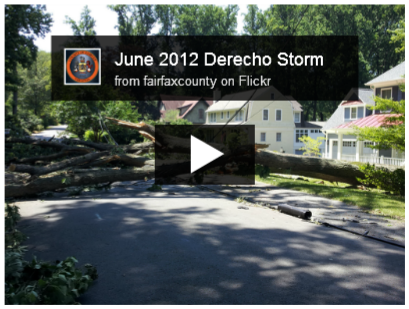


View more presentations from Fairfax County

Attachments

- Power Outages
- Emergency Information Blog Posts
- Synopsis of Events - Health Department
- Synopsis of Events - Facilities Management Department
- Department of Public Safety Communications
- Synopsis of Events - Fire and Rescue Department
- Synopsis of Events - Human Services
- Synopsis of Events - Department of Information Technology
- Synopsis of Events - Police Department
- Synopsis of Events - Department of Public Works and Environmental Services
- Synopsis of Events - McConnell Public Safety and Transportation Operations Center

Photos



Cooling Opportunities

All County facilities that had electricity were open normal hours and available as cooling opportunities for residents and visitors. Because of the widespread power outage, many County facilities unfortunately were without electricity during the early stages of the event. The County published flyers about the facilities that were open over the weekend and offering heat relief options. These flyers were distributed to the police and fire stations to give to residents showing up at these facilities, as well as published online, through social media and promoted to the media.

Fairfax County Animal Control was also on stand-by for calls from County facilities if residents came to those facilities with their pets; Animal Control was staffed to take those pets to the Animal Shelter for heat relief.

Lewinsville Presbyterian Church, McLean, opened Tuesday, July 3, to provide a cool spot for residents. The church discontinued its heat relief operations at 5 p.m. on Thursday, July 5. Other non-county sponsored locations were also opened during the event to provide relief to residents, as well as cooling opportunities in several Board of Supervisors' Districts.

Public Communications

Fairfax County public information staff used multiple methods to communicate to residents, including the emergency information blog (www.fairfaxcounty.gov/emergency/blog); Community Emergency Alert Network (CEAN) messages – email, pager, cellphone – to residents; Emergency Alert Network (EAN) messages to employees (unscheduled leave, etc.); emergency information hotline updates; employee information line messages; and media outreach. Another major outreach tool was social media, especially helpful reaching residents without electricity, utilizing Facebook, Twitter and YouTube, allowing residents to access these messages on smartphones, tablets, etc.

A special information and referral line was also created on Thursday, July 4, and staffed from 11 a.m. to 11 p.m. in case residents needed any information about the derecho, power outages, heat and fireworks.

Special Medical Needs Outreach

Volunteer Fairfax representatives in the EOC made phone calls to everyone registered on the County's Special Medical Needs Registry to see if any access or functional needs were identified; calls were started on Saturday, June 30, and continued daily through Tuesday, July 3. There were 161 registrants that were called over three days: 33 on day 1 (Monday), 118 on day 2 (Tuesday night) and the remaining 10 on Wednesday morning. Contact included direct connection or leaving messages on answering machines (an indication that power and phone services had been restored).

In addition, approximately 90 human service groups, Volunteers Active in Disasters (VOAD), nonprofit organizations, faith-based organizations, etc. were on two conference calls on Tuesday, July 3, to address human service needs. These needs were met through their regular supply cache and services that they typically provide. No supplemental supplies were needed. The only food pantry that asked for more food was Lorton Community Action Center because their food had spoiled; Capital Area Food Bank met that request.

While the Fire and Rescue Department had done windshield surveys early in the event, Fire and Rescue personnel also conducted walkabouts through Wednesday, July 4, in the hardest hit areas of the County. These areas were mapped by Geographic Information Systems (GIS), compiled with County fire district boundaries/fire box data and overlaying power outages as reported by Dominion Virginia Power.

Key Highlights

- Provided ongoing dispatch services by 9-1-1 personnel despite telephone issues; no loss of life due to 9-1-1 phone service outage as the Department of Public Safety Communications (DPSC) continued to dispatch resources and public safety agencies continued to respond.
- Prioritized critical infrastructure needs by EOC staff in conjunction with Dominion Virginia Power and the County's Facilities Management Department.
- Sent situational updates to the Board of Supervisors and the senior management team every two to three hours.
- Briefed the Board Chairman, Governor of Virginia, Virginia Secretary of Public Safety and the Virginia Secretary of Health and Human Resources during the first operational period. A press conference was held in the lobby of MPSTOC.
- Contacted all members listed in the County's Medical Needs Registry that were affected (mapped by GIS) by the power outage.
- Moved summer camps and SACC programs to accommodate the lack of power in some school/park locations.
- Monitored all health care facilities (hospitals, nursing homes, dialysis centers and others) in the County to ensure the impacts of the storm were addressed.
- Provided general and emergency information to the public through constant messaging to the community. In addition, internal communications was key as county staff were kept informed of county status; agencies also did numerous communications within the agency as well as across other county agencies to coordinate service delivery.
- Updated state and regional partners through WebEOC.
- Organized the damage assessment survey and continued to organize public safety agencies to check on at-risk populations and areas of concentrated power outages.
- Coordinated with Volunteer Fairfax to determine needs in the communities and provided assistance where required.
- Coordinated and organized a list of all Fairfax County facilities and their status throughout the event.
- Coordinated with DPWES on debris removal and assistance to VDOT.
- Coordinated with GIS to provide and post online a map of the affected boil water zone in Fairfax County.
- Worked with the Department of Vehicle Services to provide emergency fuel for generator sites at County facilities. One mid-rise residential condominium also was provided an emergency supply of fuel so that 60 residents in assisted living would not have to be

displaced.

- Coordinated school status with the FCPS EOC.
- Supported the courts with their buildings and status.
- Coordinated with the Police Department on streets/intersections closed by debris or affected by loss of electricity. Coordinated with VDOT, Virginia State Police and the County's Office of Public Affairs to provide information concerning traffic to residents.
- Several residents at County shelters that were closed due to power outages were provided alternative overnight accommodations.
- Coordinated with towns of Herndon and Vienna; Fairfax County is responsible for the emergency management role for these two jurisdictions (as outlined by the County's Emergency Operations Plan). VDEM, amateur radio emergency services, VDOT, Virginia State Police and other partners were involved in EOC operations.
- All wastewater pump stations remained operational through the use of emergency generator power. All generators were filled with fuel and checked prior to the storm event as standard practice in preparations.
- Noman Cole Jr. Pollution Control Plant remained operational despite losing one of the two power feeds (second feed was partially impacted but remained hot).
- Despite loss of communication, the I-66, I-95 and Newington Solid Waste facilities remained operational and responded with debris clearing support Saturday morning and were prepared to accept storm debris at our disposal sites.
- Solid Waste brush total for I-95 and I-66 was 4,000 tons from Saturday morning after the storm through this past Sunday.

Next Steps

- The Office of Emergency Management will conduct a complete after-incident report, bringing in County agencies, partner agencies and external partners.
- The Office of Emergency Management and the Department of Information Technology have been working and beta testing an online damage disaster database, a reporting tool for residents to report damages. Given the June 29 storm, OEM and DIT staff fast-tracked the project. The database is live and will be promoted this week for residents to report derecho damage.
- Investigate opportunities for improved communications.

Fairfax County Emergency Information Blog Posts*
June 29, 2012 to July 5, 2012
www.fairfaxcounty.gov/emergency/blog

Date and Time**	Topic
07/05/2012 1307	Instructions for Trash Pickup in Fairfax County
07/05/2012 0921	Emergency Operations Center Remains Activated
07/04/2012 2307	Fairfax County Operating Status for Thursday, July 5
07/04/2012 2212	Severe Thunderstorm Warning for Western Fairfax County
07/04/2012 1757	Firework Safety
07/04/2012 1448	40+ Roads Impacted by Storm Damage; Obey Four-way Stop Rules
07/04/2012 1357	Key Tips About Insurance
07/04/2012 1236	Storm Response Update
07/04/2012 1140	Heat Advisory Until 9 p.m.
07/03/2012 1900	Storm Aftermath Update: Tuesday Afternoon
07/03/2012 1737	July 4 Resource Numbers
07/03/2012 1600	Update: Roads Impacted by Storm Damage
07/03/2012 1556	Generator Use During an Emergency
07/03/2012 1508	July 4 Extended Hours for Fairfax County RECenters
07/03/2012 1410	9-1-1 Call Center Director Explains Telecommunications Outage
07/03/2012 1351	Reminder: Food Safety for Food Establishments and Residents
07/03/2012 1227	Update: Roads Impacted by Storm Damage
07/03/2012 1203	Verizon 9-1-1 Service Restored to Fairfax County
07/03/2012 1031	View and Submit Storm Photos
07/03/2012 0947	Roads Impacted by Storm Damage Update
07/03/2012 0914	Replacing SNAP Benefit Food from the Power Outage
07/03/2012 0622	Fairfax County Operating Status for Tuesday, July 3
07/03/2012 0515	Morning Commute Reminders
07/02/2012 1826	Storm Aftermath Update: Monday Afternoon
07/02/2012 1640	Fairfax County Operating Status for Tuesday, July 3
07/02/2012 1542	Storm Recovery Update from the Emergency Operations Center
07/02/2012 1455	Roads Impacted by Storm Damage Update
07/02/2012 1447	Boil Water Advisory Lifted for Falls Church Water Utility Customers in Tysons, Vienna and Dunn Loring
07/02/2012 1443	Heading to the Pool? Safety Tips
07/02/2012 1346	Library Due Dates Extended to July 9
07/02/2012 1302	Medication Safety in the Heat
07/02/2012 1151	Tree and Debris Removal
07/02/2012 1051	9-1-1 and Non-Emergency Numbers
07/02/2012 0838	Seeking Relief From the Heat
07/02/2012 0043	Storm Aftermath
07/02/2012 0436	80+ Intersections Without Traffic Lights; Obey Four-way Stop Rules
07/01/2012 2108	Fairfax County Park Authority Operating Status

07/01/2012 2014	Monday's Commute
07/01/2012 1929	County, Regional Operating Status for Monday, July 2
07/01/2012 1631	Updated Boil Water Advisory Area Map
07/01/2012 1618	Protect Yourself During Cleanup
07/01/2012 1533	Avoid Repair Fraud
07/01/2012 1336	Heat Relief Options: Libraries and RECenters
07/01/2012 1322	Food Safety
07/01/2012 1252	Do Your Storm Repairs Need a Permit?
07/01/2012 1224	It's Still Hot
07/01/2012 1021	Pet Safety on Hot Days
07/01/2012 0851	Oak Marr RECenter Additional Heat Relief
07/01/2012 0750	Landfills Open Today for Debris Disposal
07/01/2012 0617	Storm Aftermath Update: Sunday Morning
07/01/2012 0553	View Map of Boil Water Advisory Area
07/01/2012 0544	Transportation Update
07/01/2012 0217	What Do You See? Show Us!
06/30/2012 2303	Storm Aftermath Update
06/30/2012 2229	Boil Water Notice in Portions of Tysons, Vienna, Dunn Loring and Merrifield
06/30/2012 2144	Where to Call for Non-Emergencies
06/30/2012 2120	Fairfax Water System Operating Normally
06/30/2012 2007	Statewide Road Updates
06/30/2012 1905	Call 9-1-1 Only for Emergencies; Other Essential Information
06/30/2012 1851	Libraries Open Tomorrow for Residents Seeking Relief From Heat
06/30/2012 1756	Generator Use
06/30/2012 1628	Video: Gov. Bob McDonnell at the Emergency Operations Center
06/30/2012 1556	9-1-1 Service is Partially Restored
06/30/2012 1529	Take Safety Precautions During Cleanup
06/30/2012 1420	Check on Neighbors; Food Safety Tips
06/30/2012 1406	Several Park Facilities Closed
06/30/2012 1307	Emergencies Declared for County and State; Public Asked to Restrict Non-Essential Travel
06/30/2012 1234	List of County Facilities Without Power
06/30/2012 1207	Storm Update; Telecommunications Outage Affecting 9-1-1
06/30/2012 1011	Phone Lines Unavailable at 9-1-1 Call Center; Report Emergencies to Police or Fire Station
06/30/2012 0903	Call Before Going to County Facilities
06/30/2012 0116	Storm Aftermath: What You Need to Know
06/29/2012 1605	Drink Up!

* A majority of these messages were also used on the County's social media sites (Twitter and Facebook); many messages were also used for CEAN messages, hotline messages, etc.

** Times are military.

A Sampling of Twitter Messages Regarding Derecho-Related 9-1-1 Outages

FEMA @fema — 30 Jun
6/30 "@fairfaxcounty: What you need to know tonight: 9-1-1, power, water, roads, heat relief & food safety: bit.ly/MJwvdd #ffxstorm"
View media

Jenn Chu @jxchu — 30 Jun
RT @fairfaxcounty: Boil water notice in portions of Tysons, Vienna, Dunn Loring & Merrifield bit.ly/LbtG9s Please RT #ffxstorm
View media

ConnectionNewspapers @Followfairfax — 30 Jun
MT @fairfaxcounty: 911 service partly restored. If unsuccessful call 703-691-7561, 703-691-3680 or go to police/fire station #FFXstorm
Expand

Max Smith @amaxsmith — 30 Jun
RT @fairfaxcounty 911 service partially restored. If unsuccessful call 703-691-7561, 703-691-3680 or report to police/fire station #FFXstorm
Expand

Dave Wendel
@dwendel
Follow

I have to give a shout out to @fairfaxcounty for doing an awesome job in picking up the broken branches from the storm without calling!

Reply Retweet Favorite

8:15 AM - 5 Jul 12 via TweetDeck · Embed this Tweet

Fairfax County @fairfaxcounty — 30 Jun
We need to try and use common hashtag on Twitter. Please use #ffxstorm in your tweets. It will help whole community know what's going on.
Expand

TBD @TBD — 30 Jun
MT @fairfaxcounty: Due to storm, 911 calls are not being received. Report emergencies at nearest police or fire station.
Expand

NBCWashington @nbcwashington — 30 Jun
RT @fairfaxcounty: 911 calls are not being received. Verizon is working on the problem. Report emergencies at nearest police/fire station.
Expand

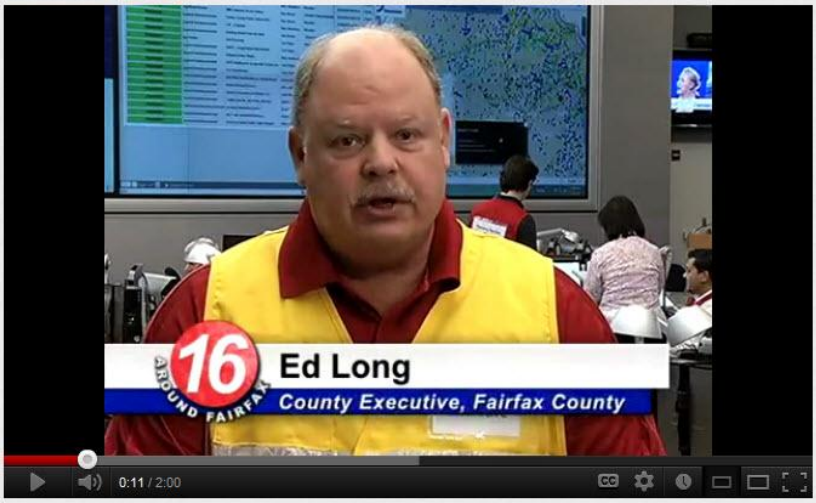
Gerry Connolly @GerryConnolly — 3 Jul
Verizon 9-1-1 service fully restored in @fairfaxcounty. #FFXstorm
Expand

Ira Entis @iraentis — 2h
Kudos to @fairfaxcounty for their very supportive communications during the power outages. Great job. #FFXStorm
Expand

YouTube Browse | Movies | Upload Sign In

Storm Recovery Update

Subscribe 421 videos



Like Share 277 views

Published on Jul 2, 2012 by fairfaxcountygov

0 likes, 0 dislikes

County Executive Ed Long and Dave McKernan, Emergency Management Coordinator, speak to the ongoing recovery as a result of Friday's storm, power outages and the ongoing heat wave.

For the latest emergency information, visit, follow and subscribe to:
Fairfax County Emergency Blog: www.fairfaxcounty.gov/emergency/blog
Facebook: http://www.facebook.com/fairfaxcounty
Twitter: http://www.twitter.com/fairfaxcounty or @fairfaxcounty

Category:
News & Politics

More from 'Uploads' on fairfaxcountygov

Grilling Food Safely
by fairfaxcountygov
60 views

Gov. McDonnell and Chairman Bulova
by fairfaxcountygov
116 views

Chairman Sharon Bulova Statement on
by fairfaxcountygov
44 views

Suggestions

Not Prepared!!!
by DiscoveringHisWay
209 view FEATURED VIDEO

Assessing Storm Damage in Fairfax
by fairfaxcountygov
66 views

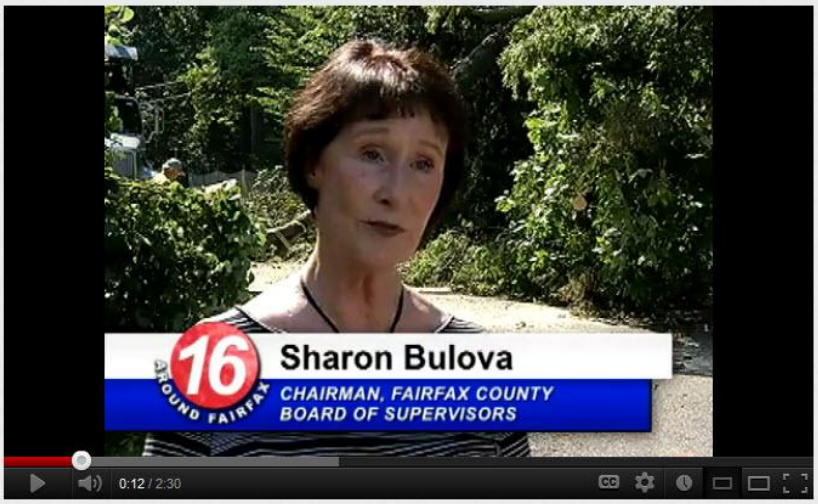
Governor McDonnell Talks With President
by fairfaxcountygov
74 views

Gov. McDonnell and Chairman Bulova
by fairfaxcountygov
13 views

YouTube Browse | Movies | Upload Sign In

Assessing Storm Damage in Fairfax County

Subscribe 421 videos



Like Share 78 views

0 likes, 0 dislikes

Published on Jul 3, 2012 by fairfaxcountygov

Fairfax County Board of Supervisors Chairman Sharon Bulova provides an update on the storm damage assessment and cleanup.

Please note: Fairfax County is not responsible for the content provided on "related" and "promoted" videos that are accessible from this county's YouTube channel. All viewers should note that these related videos and comments expressed on them do not reflect the opinions and position of the Fairfax County government or its officers and employees.

Category:
News & Politics

More from 'Uploads' on fairfaxcountygov

Storm Recovery Update
by fairfaxcountygov
278 views

Grilling Food Safely
by fairfaxcountygov
60 views

Gov. McDonnell and Chairman Bulova
by fairfaxcountygov
116 views

Suggestions

Storm Recovery Update
by fairfaxcountygov
1 view

Understanding Your Fairfax County Real
by fairfaxcountygov
255 views

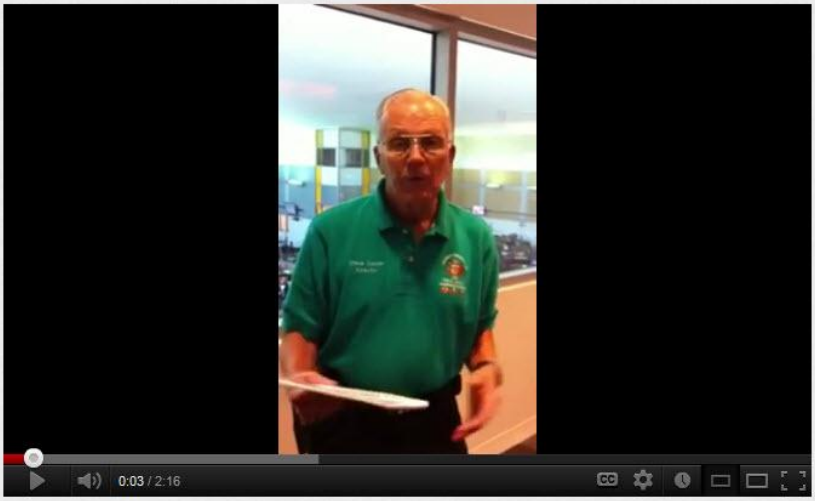
July 4 Heat Advisory
by fairfaxcountygov
40 views

Farmers Markets 2012 Opening
by fairfaxcountygov
68 views

YouTube Browse | Movies | Upload Sign In

9-1-1 Call Center Update

Subscribe 421 videos



Like Share 226 views

Published on Jul 3, 2012 by fairfaxcountygov

0 likes, 0 dislikes

Steve Souder, director of the Department of Public Safety Communications, discusses the telecommunications outages that affected the 9-1-1 Call Center after the derecho storm.

Category:
News & Politics

Tags:
9-1-1 Storm Derecho Call Center public safety

License:
Standard YouTube License

Show less

More from 'Uploads' on fairfaxcountygov

Assessing Storm Damage in Fairfax
by fairfaxcountygov
78 views

Storm Recovery Update
by fairfaxcountygov
277 views

Grilling Food Safely
by fairfaxcountygov
60 views

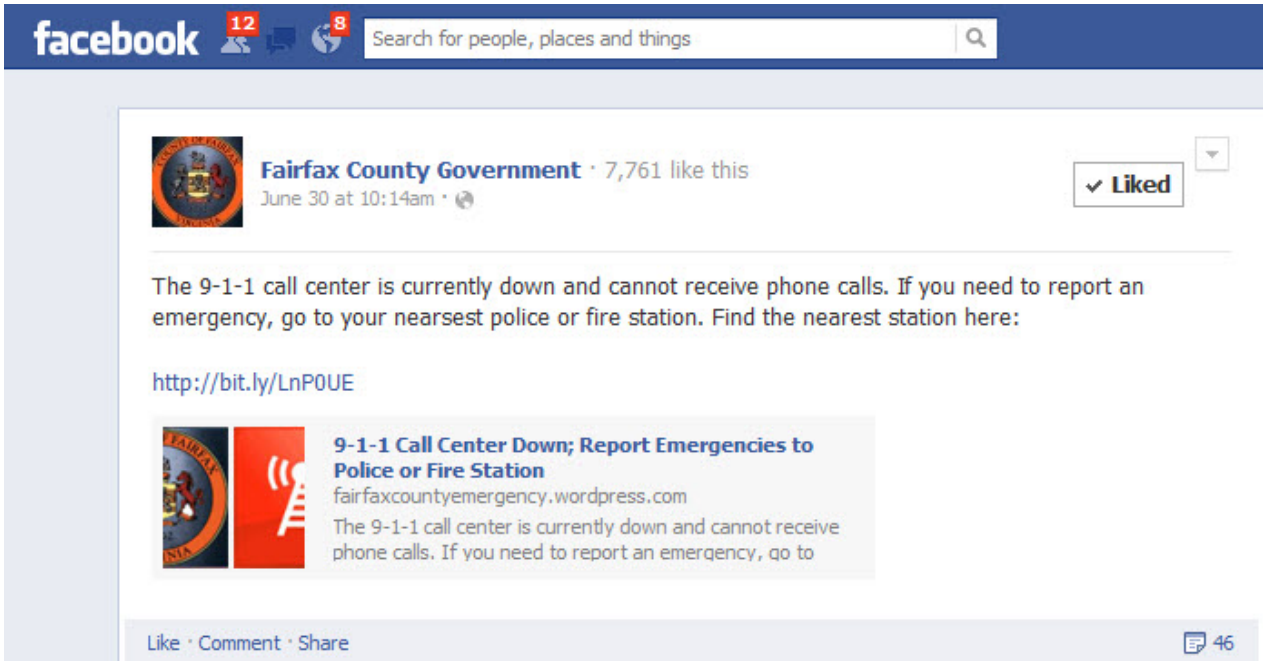
Suggestions

Gov. McDonnell and Chairman Bulova
by fairfaxcountygov
13 views

Assessing Storm Damage in Fairfax
by fairfaxcountygov
66 views

July 4 Heat Advisory
by fairfaxcountygov
40 views

Storm Response Update: July 4
by fairfaxcountygov
90 views


facebook
12
8
Search for people, places and things
Fairfax County Government · 7,761 like this
June 30 at 10:14am ·
Liked
The 9-1-1 call center is currently down and cannot receive phone calls. If you need to report an emergency, go to your nearsest police or fire station. Find the nearest station here:
http://bit.ly/LnP0UE
9-1-1 Call Center Down; Report Emergencies to Police or Fire Station
fairfaxcountyemergency.wordpress.com
The 9-1-1 call center is currently down and cannot receive phone calls. If you need to report an emergency, go to
Like · Comment · Share
46

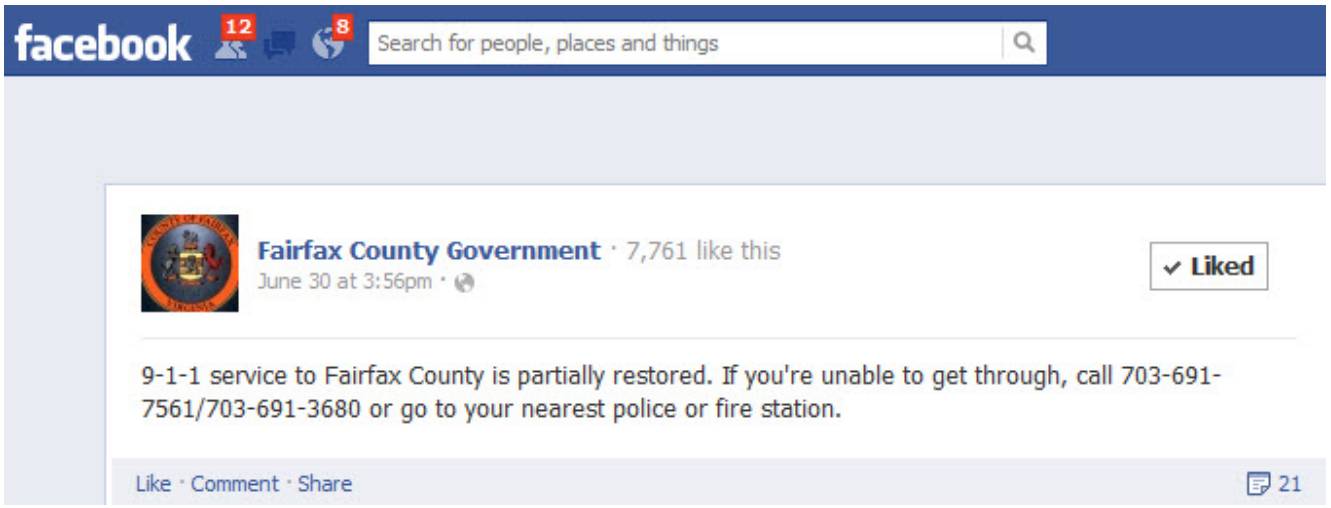

facebook
12
8
Search for people, places and things
Fairfax County Government · 7,761 like this
June 30 at 3:56pm ·
Liked
9-1-1 service to Fairfax County is partially restored. If you're unable to get through, call 703-691-7561/703-691-3680 or go to your nearest police or fire station.
Like · Comment · Share
21

Exhibit 4

ORDER NO. 83944

IN THE MATTER OF THE COMMISSION'S INVESTIGATION INTO THE OUTAGES OF VERIZON MARYLAND INC. 9-1-1 NETWORK IN MARYLAND	* * * * * * * * * *	BEFORE THE PUBLIC SERVICE COMMISSION OF MARYLAND CASE NO. 9265

Issue Date: March 25, 2011

ORDER TO SHOW CAUSE

To: Verizon Maryland Inc.

The Public Service Commission ("Commission") has conducted several hearings on outages that have occurred on the Verizon Maryland Inc. ("Verizon") 9-1-1 network in which the underlying Maryland County Public Safety Answering Point ("PSAP") was not advised of the network failure. In the most recent hearing held on March 2, 2011, representatives of the Prince George's County PSAP and the Montgomery County PSAP appeared and identified a series of multiple instances in which some or all of the 9-1-1 trunks delivering calls from wireless devices to the applicable PSAP were out-of-service, and callers were receiving fast busy signals. The dates of these "outages" were: July 25, 2010; December 17, 2010; January 26, 2011; and January 31, 2011.

Although the Verizon Network Operational Center ("NOC") was aware that a "fast busy" situation had occurred on the trunks providing 9-1-1 calls to the PSAPs, the NOC did not notify the Verizon Customer Care Center ("CCC"), which then could have notified the PSAPs. There was testimony that the NOC procedures did not require it to

contact the CCC, even though these trunks were a part of a public safety network necessary for the public to contact the PSAPs to obtain assistance for situations which may well be life-threatening. Further, the PSAPs testified that had they been aware that the outages occurred, they could have initiated a public information plan to advise the public (and emergency providers) that the outages existed and provide alternative means for the public to contact the PSAP or other emergency responders.

On the dates identified, the inability of persons' calls to be delivered to the PSAP represented a public safety hazard. Although failures may occur in the network, the PSAPs have a back-up plan in the event any lengthy outage occurs, and can alert the public to alternative methods to ensure that the public is able to request emergency assistance. These plans, however, are useless unless the PSAP is aware of the outage, and it is able to implement these alternative measures. Verizon's lack of prompt and timely communications to the PSAPs that some or all of the 9-1-1 trunks were not working properly and calls were not being delivered during these emergency situations is unacceptable.

Section 5-303 of the Public Utilities Article, *Annotated Code of Maryland* ("PUA") mandates that "[a] public service company shall furnish equipment, services, and facilities that are safe, adequate … and efficient…." The information obtained during the hearing held on March 2, 2011 about the outages that the Prince George's County PSAP and the Montgomery County PSAP experienced and the lack of timely, or any, communications by Verizon about the 9-1-1 trunk failures leads the Commission to conclude preliminarily that Verizon violated § 5-303 of the PUA. Verizon placed the safety of these County residents in jeopardy as the 9-1-1 calls directed to the PSAPs that

would otherwise have been answered by the PSAPs could not be answered. Further, due to the lack of any timely notice of the outages, the PSAPs were unable to alert these residents of alternative means to contact the PSAP for emergency assistance.

Section 13-201(b)(1) of the PUA grants authority to the Commission to impose a civil penalty not exceeding $10,000 per separate offense[1] against a person who violates a provision of the PUA.[2] Further, § 13-202(c)(1) of the PUA gives authority to the Commission to impose a civil penalty on a public service company that violates a provision of the PUA that relates to safety. Prior to making a determination on whether Verizon violated a provision of the PUA and, if so, whether to issue a civil penalty or the amount of a civil penalty, the Commission will provide Verizon an opportunity to show cause as to why the Commission should not make a conclusive finding that Verizon violated § 5-303 of the PUA, and, if it makes that finding, why a civil penalty should not be imposed on Verizon for its failure to provide safe, adequate and efficient services, thereby, endangering the public safety of the residents of the two counties.

IT IS THEREFORE, this 25th day of March, in the year Two Thousand Eleven by the Public Service Commission of Maryland,

ORDERED: (1) That Verizon Maryland Inc. shall appear before the Commission on April 5, 2011 at 11:30 a.m. in the Commission's 16th Floor Hearing Room, William Donald Schaefer Tower, 6 St. Paul Street, Baltimore, Maryland 21202 to show cause why: (a) the Commission should not conclusively find that Verizon violated § 5-303 of the Public Utilities Article for failure to promptly communicate the outage or

[1] Section 13-201(c)(2) and (3)of the PUA provides that each violation is a separate offense and that each day or part of a day the violation continues is a separate offense.
[2] Section 13-201(d) of the PUA sets forth the factors the Commission shall consider prior to determining the amount of a civil penalty.

failure of 9-1-1 network service to Prince George's County and/or Montgomery County on July 25, 2010; December 17, 2010; January 26, 2011; and January 31, 2011; and (b) if the Commission finds that Verizon violated § 5-303 of the Public Utilities Article, it should not impose a civil penalty on Verizon Maryland Inc., pursuant to either § 13-201 or § 13-202 of the Public Utilities Article or both.

By Direction of the Commission,

/s/ T. J. Romine

Terry J. Romine
Executive Secretary

cc: Ronald Decker, Chief Staff Counsel
Paula Carmody, People's County
Gordon Deans, Maryland Emergency Numbers System Board
Bill Ferretti, Montgomery County Police 9-1-1
William McGowan, Prince George's County Public Safety Communications

Exhibit 5

EMERGENCY 911 SERVICES

A. GENERAL

Emergency 911 Service is the three digit telephone number designated throughout the United States as the emergency number used by the public to facilitate the reporting of an emergency requiring response by an authorized public safety agency or emergency service provider.

B. Applicability

This service is applicable to governmental agencies or entities responsible for providing emergency services within the 9-1-1 Service Area. The Company 9-1-1 Service is limited to the transport of a 9-1-1 call from a caller (end user) to a public Safety Answering Point (PSAP).

C. Territory

This service is offered in all areas in Virginia covered by the company 9-1-1 Service per the provisions of the Schedule of Exchange Maps in Tariff No.202, Section 2.

D. Acronyms and Definitions

D.1 Acronyms

ALI - Automatic Location Identification
ANI - Automatic Number Identification
CLEC - Competitive Local Exchange Company
CO - Central Office
CPE - Customer Premises Equipment
DMS - Data Management System
EMF - Enhanced Multi-Frequency
EMS - Emergency Medical Service
ESN/ESZ - Emergency Service Number/Emergency Service Zone
ICB - Individual Case Basis
LEC - Local Exchange Carrier
MSAG - Master Street Address Guide
NCM - Network Control Modem
PBX - Private Branch Exchange
PSAP - Public Safety Answering Point
PSTN - Public Switched Telephone Network
SRDB - Selective Routing Database

EMERGENCY 911 SERVICES

D. Acronyms and Definitions (Continued)

D.2 Definitions

9-1-1
A three-digit telephone number to facilitate the reporting of an emergency requiring response by a public safety agency.

9-1-1 SERVICE AREA
The geographic area in which the 9-1-1 Customer will respond to all 9-1-1 calls and dispatch appropriate emergency assistance.

9-1-1 TRUNK
A dedicated facility from the Company Selective Router to the PSAP for delivery of 9-1-1 calls.

9-1-1 TANDEM
The Central Office that provides the tandem switching of 9-1-1 calls. It controls delivery of the voice call with ANI to the Public Safety Answering Point (PSAP) and provides Selective Routing, Speed Calling, Selective Transfer, Fixed Transfer, and certain maintenance functions for each PSAP. Also known as 9-1-1 Selective Routing Tandem or Selective Router.

ACCESS LINES
The connection between a subscriber’s premises network interface and the Local Exchange Carrier that provides access to the Public Switched Telephone Network.

AUTOMATIC LOCATION IDENTIFICATION (ALI)
The automatic display at the PSAP of the caller's telephone number, the address/location of the telephone and supplementary emergency services information.

AUTOMATIC LOCATION IDENTIFICATION (ALI) DATABASE ADMINISTRATION
The functionality provided by the Company for the creation and updated maintenance of ALI records in the ALI database. ALI Database Administration Service does not include ALI storage or processing for use during an E9-1-1 call.

EMERGENCY 911 SERVICES

D. Acronyms and Definitions (Continued)

D.2 Definitions (Continued)

AUTOMATIC LOCATION IDENTIFICATION RECORDS
The telephone number, the address/location of the telephone, Emergency Service Number (ESN), and supplementary emergency service information for display at a PSAP.

AUTOMATIC NUMBER IDENTIFICATION (ANI)
Telephone number associated with the access line from which a call originates.

BACK-UP PSAP
A PSAP designated to receive calls when the primary PSAP is unable to do so.

CENTRALIZED AUTOMATIC LOCATION IDENTIFICATION (CALI)
A remote centralized ALI database platform consisting of two host machines, one being the primary system responding to the PSAP, and the other being the secondary system.

CALI STORAGE/PROCESSING
The data storage for the ALI records with the redundant CALI system, both the primary and the secondary. The ALI records are updated on the CALI System multiple times a day with Change/Add/Delete activity.

CALI will process ALI in two ways:

- The ANI of the 9-1-1 caller is received by the host provider's Selective Router, which then routes the call to the appropriate PSAP. Upon receipt of the ANI at the PSAP an ALI query is made, using the ANI as the key, to look up the location information on the CALI platform. The CALI database will respond with the matching ALI, if it resides on the CALI platform and will process it back to the requesting PSAP.

- The CALI can also be directed by the ANI to steer to another database to receive the appropriate ALI record. The record when received by the CALI platform from the other ALI database is processed back to the requesting PSAP.

EMERGENCY 911 SERVICES

D. Acronyms and Definitions (Continued)

D.2 Definitions (Continued)

CALI SYSTEM PORT
The CALI System Port provides the interface for PSAPs to acquire local ALI dips with the CALI. The port rate includes the rate for the two ports that are required for redundancy, one port into the primary CALI system and one port into the secondary CALI system. The port rate includes the capability to establish a secure connection with the CALI system, including security firewall.

CALLER
An individual who places a 9-1-1 call in an effort to request assistance of a public safety nature. May also be referred to as an end user.

CENTRAL OFFICE (CO)
The Local Exchange Carrier facility where access lines are connected to switching equipment for connection to the Public Switched Telephone Network. Also referred to as the End Office.

COMPETITIVE LOCAL EXCHANGE CARRIER (CLEC)
A Telecommunications Carrier (TC) under the state/local Public Utilities Act that provides local exchange telecommunications services other than the Incumbent Local Exchange Carriers (ILEC). Also known as Alternate Local Exchange Carriers (ALECs), Competitive Local Providers (CLPs), Competitive Access Providers (CAPs), Certified Local Exchange Carriers (CLECs), and Local Service Providers (LSPs).

EMERGENCY 911 SERVICES

D. Acronyms and Definitions (Continued)

D.2 Definitions (Continued)

CUSTOMER
Governmental unit or other entity authorized to provide the E9-1-1 Service provisioned by the Company.

CUSTOMER PREMISES EQUIPMENT (CPE)
Communications or terminal equipment located in the Customer's facilities.

DATABASE
An organized collection of information, typically stored in computer systems, comprised of fields, records (data) and indexes. In 9-1-1, such data bases include MSAG, telephone number/ESN, and telephone customer records.

DATA MANAGEMENT SYSTEM (DMS)
A system of manual procedures and computer programs used to create, store and update the data required to provide Selective Routing (SR) and/or Automatic Location Identification for E9-1-1 systems.

DEDICATED CIRCUIT
A telephone circuit used for a single purpose, such as transmission of 9-1-1 calls.

DEFAULT ROUTING
The capability to route a 9-1-1 call to a designated (default) PSAP when the incoming 911 call cannot be selectively routed due to an ANI failure or other causes. This is a standard feature of E9-1-1 Service. No ANI/ALI data may be available when a call is sent via Default Routing.

DIVERSE ROUTING
The practice of routing calls through different circuit paths in an effort to prevent total loss of the E9-1-1 system in the event an individual circuit is disabled.

EMERGENCY 911 SERVICES

D. Acronyms and Definitions (Continued)

D.2 Definitions (Continued)

DUAL SELECTIVE ROUTING
Dual Selective Routing is provided using two Selective Routers (S/Rs) that mirror the E9-1-1 call delivery effort in order to provide redundancy, and a higher level of network reliability in the event of a major failure at one of the Selective Routers. For example, if the local Central Office has 4 trunks, they would be split with two trunks terminated to one S/R, and the other two trunks terminated to the other S/R. This diverse routing provides additional reliability in cases of cable cuts or failures.

EMERGENCY MEDICAL SERVICE (EMS)
Fire, hospital, poison control, etc. response centers.

EMERGENCY SERVICE NUMBER (ESN) / EMERGENCY SERVICE ZONE (ESZ)
An ESN is a three to five digit number representing a unique combination of emergency service agencies (Law Enforcement, Fire and Emergency Medical Service) designated to serve a specific range of addresses within a particular geographical area, or Emergency Service Zone (ESZ). The ESN facilitates selective routing and selective transfer, if required, to the appropriate PSAP and the dispatching of the proper service agency(ies).

END OFFICE
The Central Office(s) from which 9-1-1 calls are originated. Also see Central Office.

END USER
An individual placing a 9-1-1 call in order to obtain emergency assistance. May also be referred to as a Caller.

ENHANCED 9-1-1(E9-1-1)
An emergency telephone system which includes network switching, database and CPE elements capable of providing Selective Routing, Selective Transfer, Fixed Transfer, caller routing and location information, ANI and ALI.

EMERGENCY 911 SERVICES

D. Acronyms and Definitions (Continued)

D.2 Definitions (Continued)

ENHANCED MULTI-FREQUENCY (EMF)
The ability to pass 20-digits from the E9-1-1 Selective Router to the PSAP.

EXCHANGE
A defined area, served by one or more telephone central offices, within which a Local Exchange Carrier furnishes service.

FIXED TRANSFER
The capability of a PSAP attendant to transfer a 9-1-1 call to a pre-determined location by activating a single button on Customer Premise Equipment that has been pre-programmed to utilize a speed dialing code associated with the Company's 9-1-1 network service.

LOCAL EXCHANGE CARRIER (LEC)
A Telecommunications Carrier (TC) under the state/local Public Utilities Act that provides local exchange telecommunications services. Also known as Incumbent Local Exchange Carriers (ILECs), Alternate Local Exchange Carriers (ALECs), Competitive Local Exchange Carriers (CLECs), Competitive Local Exchange Carriers (CLECs), Competitive Access Providers (CAPs), Certified Local Exchange Carriers (CLECs), and Local Service Providers (LSPs).

MASTER STREET ADDRESS GUIDE (MSAG)
A database of street names and house number ranges within their associated communities defining Emergency Service Zones (ESZs) and their associated Emergency Service Numbers (ESNs) to enable proper routing of 9-1-1 calls.

NETWORK CONTROL MODEM (NCM)
The NCM allows the Customer to reroute 9-1-1 calls from a PSAP to an alternate location quickly in the event of an emergency or for any other reason. With the dial-up NCM, the Customer will dial into the NCM, pass multiple security checks and then activate the transfer of 9-1-1 incoming calls. The dial-up NCM eliminates the need to have a dedicated facility (e.g., Make Busy switch).

EMERGENCY 911 SERVICES

D. Acronyms and Definitions (Continued)

D.2 Definitions (Continued)

P.01 GRADE OF SERVICE
The probability (P), expressed as a decimal fraction, of a telephone call being blocked. P.01 is the grade of service reflecting the probability that one call out of one hundred during the average busy hour will be blocked. P.01 is the minimum recommended Grade of Service for E9-1-1 trunk groups.

PRE-BASIC 911 SERVICE
Pre-basic 911 Service enables the routing of 911 calls to a designated telephone number provided by the County or State over the Public Switched Telephone Network (PSTN). This service is applicable in those Counties that do not have Enhanced 911.

PSAP ATTENDANT
A person authorized by the Customer who is responsible for answering incoming 9-1-1 calls at a PSAP, determining the action to be taken, and executing the PSAP's procedures in the disposition of such calls.

PUBLIC SAFETY ANSWERING POINT (PSAP)
A facility equipped and staffed to receive 9-1-1 calls. A Primary PSAP is one to which 9-1-1 calls are routed directly from the E9-1-1 Tandem. A Secondary PSAP is one to which 9-1-1 calls are transferred from a Primary PSAP.

PUBLIC SWITCHED TELEPHONE NETWORK (PSTN)
The network of equipment, lines, and controls assembled to establish communication paths between calling and called parties in North America.

RECORD
The subscriber information associated with a telephone number.
For billing, the number of records will be equal to the total of the Company's subscriber access lines, and the actual number of record counts for non-Company records (e.g., other ILECs, CLPs, Shared Tenant Services, Private Switch providers, etc.), in the E9-1-1 database. Record counts for billing will be updated annually.

SELECTIVE ROUTER (SR)
See 9-1-1 Tandem.

EMERGENCY 911 SERVICES

D. Acronyms and Definitions (Continued)

D.2 Definitions (Continued)

SELECTIVE ROUTING (SR)
The routing of a 911 call to the proper PSAP based upon the location of the ANI.

SELECTIVE ROUTING DATA BASE (SRDB)
The routing table that contains telephone number to ESN relationships which determines the routing of 9-1-1 calls.

SELECTIVE TRANSFER
The capability to transfer a 9-1-1 call to a response agency by operation of one of several buttons on Customer Premise Equipment that has been pre-programmed to utilize a speed dialing code associated with the Company's 9-1-1 network service. These buttons are typically designed as Law Enforcement, Fire and EMS; based on the ESN of the caller.

SUBSCRIBER
A person or business that orders access line service from a telephone company.

EMERGENCY 911 SERVICES

E. Rules and Regulations

E.1 General

9-1-1 Service is provided by the Company where facility and operating conditions permit.

9-1-1 Service is limited to the use of the central office number 911 as the emergency number and only one 911 Service will be provided within any Customer's 9-1-1 Service area.

E9-1-1 Service is classified as a Business Exchange Service, and is arranged for one-way incoming service to the appropriate PSAP. Outgoing calls can only be made on a transfer basis (no originating calls).

The Customer may be a municipality or other state or local governmental unit, or an authorized agent of one or more municipalities, counties, or other state or local governmental units to whom authority has been lawfully delegated. The Customer must be legally authorized to subscribe to the service and have public safety responsibility by law to respond to telephone calls from the public for emergency, law enforcement, fire, EMS or other emergency services within the 9-1-1 Service Area.

The Company does not answer and/or forward 9-1-1 calls, but furnishes the use of its facilities to enable the Customer's personnel to receive such calls.

No local usage charges apply to the calling party for calls to 911 lines.

The calling party forfeits any privacy rights afforded by a nonpublished or nonlisted service when calling 9-1-1 as referenced in Tariff S.C.C. –Va. – No. 203, Section 4.

Provision of Enhanced Emergency Number Service - E9-1-1 as specified in this Tariff, includes the network and other regulated E9-1-1 Services.

Provision of Enhanced Emergency Number Service - E9-1-1 as specified in this Tariff, includes the network and other facilities where the E9-1-1 Service Area coincides with the Company serving boundaries. However, where the Company boundaries and the E9-1-1 Service Area do not coincide, then the Customer will be required to bear additional charges based on costs for all supplemental network and/or other facilities required in the provision of this service. These charges will be determined on a per occasion basis.

EMERGENCY 911 SERVICES

E. Rules and Regulations (Continued)

E.1 General (Continued)

Services offered under this tariff are not subject to temporary suspension for non-payment. Service will continue to be provided and billed at applicable rates, and the Company and Customer agree to work cooperatively together to establish reasonable payment arrangements.

The 9-1-1 emergency number is not intended to replace the telephone service of the various Public Safety Agencies which may participate in the use of this number. The Customer must subscribe to additional local exchange service at the PSAP for administrative purposes for placing of outgoing calls and for receiving other emergency calls, including any which might be relayed by Company operators or other telecommunication service provider operators. In order for phone calls of a non-emergency nature to reach the PSAP, the main directory listing for the PSAP must be a ten-digit local exchange administrative telephone number.

Prior to dispatch, the 9-1-1 PSAP attendant will attempt to obtain the location of the emergency from the caller. The address information maintained by the Company may not be the actual location of the emergency.

The Customer shall make operational tests as, in the judgment of the Customer, are required to determine whether the E9-1-1 system furnished by the Company, is functioning properly for its intended use.

The Company or the Customer, whoever first detects a problem, shall promptly notify the Company in the event the system is not functioning properly.

EMERGENCY 911 SERVICES

E. Rules and Regulations (Continued)

E.1 General (Continued)

When an order for E9-1-1 Service and facilities or requests for additions, rearrangements, relocations or modifications or Service and equipment are canceled in whole or in part prior to completion of the work involved, the Customer is required to reimburse the Company for all expenses incurred in handling the request before notice of cancellation is received. Such charges, however, are not to exceed all charges which would apply if the work involved in complying with the request had been completed.

When an E9-1-1 Service is ordered out of this tariff by the Customer, the Company will bill the Customer upon the in-service date of the System. Where an additional component or service, or a change to the service is ordered, the additional service or change will be billed upon its in-service date.

Provisioning of 9-1-1 Service will conform to applicable local, state and federal rules and regulations.

Customer may order other services from the Company, outside the scope of this E9-1-1 Service tariff, as may be available in Company's other tariffs, at the rates, terms and conditions set forth in the applicable tariff.

General Regulations located in S.C.C. -Va. -No.201, General Regulations Tariff will also apply to this Service offering.

EMERGENCY 911 SERVICES

E. Rules and Regulations (Continued)

E.2 Network

Company serving boundaries and political subdivision boundaries may not coincide. If a central office serves telephones located both within and outside the public safety jurisdiction, it is the obligation of the Customer to make arrangements to handle all E9-1-1 calls that originate from telephones served by these central offices.

All 911 calls for Pre-basic 911 Service from a specific central office code must be routed to a single Public Safety Answering Point.

The Customer must subscribe to a sufficient number of service lines to all Primary PSAPs and to Secondary PSAPs that are equipped to display Automatic Number Identification to maintain the PSAP's desired grade of service. The PSAP may order additional trunks at an additional charge to increase the grade of service beyond P.01.

Where a 9-1-1 call is placed by the calling party via interconnection with an interexchange carrier, the Company cannot guarantee the completion of said 911 call, the quality of the call or any service elements that may otherwise be provided with 911 Service.

With respect to subscribers of non-regulated telephone services (e.g. shared tenant service or PBX service), callers placing E9-1-1 calls originating on telephone lines that carry foreign dial tone or calls originating outside the Customer's E9-1-1 Service area, Company is not responsible for the accuracy of subscriber location information (ALI or ANI).

9-1-1 calls transferred from a Public Safety Answering Point to another location via exchange facilities are billed Measured Service rates, as specified in Tariff S.C.C. -Va. -No.202, LOCAL EXCHANGE SERVICES TARIFF, where applicable or long distance message charges, as appropriate as though the call originated at the transfer location. 911 calls that can be transferred to another location via private lines require the installation of the appropriate private lines at rates and charges as specified in Tariff S.C.C. –Va. –No. 217, INTRASTATE ACCESS TARIFF.

The Company will provide diverse routing where available. In the event where the Customer requests additional diversity, it will be provided subject to availability in the manner set out in Tariff S.C.C. –Va. –No. 217, INTRASTATE ACCESS TARIFF, Section 11. The actual level of diversity will be a joint decision between the Company and the Customer. Additional charges may apply.

EMERGENCY 911 SERVICES

E. Rules and Regulations (Continued)

E.3. Data

Information provided by the Company as part of the provision of E9-1-1 is to be used only for the purpose of answering and dispatching emergency calls.

The Customer and the Company recognize that the addresses provided with Automatic Location Identification (ALI) are the same addresses that the Company maintains for its normal business records and that neither the Customer nor the Company can guarantee their existence or accuracy in emergency situations. Therefore, the Customer recognizes that addresses should be requested from the calling party. When the customer becomes aware of any inaccuracies in the data provided by the Automatic Location Identification feature, it shall promptly notify the Company. The Company will make the correction within a reasonable time under the circumstances.

E9-1-1 information consisting of the names, addresses and telephone numbers of subscribers whose listings are not published in directories or listed in the Directory Assistance records is confidential. Thus, information will be provided on a call-by-call basis only for the purpose of responding to emergency calls received at the PSAPs, or to qualified providers of emergency services per 47 USC 222 (g), who purchase Emergency Service Listings (not included in this tariff). The E9-1-1 calling party forfeits the privacy afforded by non-listed service and non-published service to the extent that the telephone number, address, and name associated with the originating station location is furnished to PSAPs or provider of emergency services.

The Company is obligated, by the requirements of the Electronic Communications Privacy Act of 1986 (18 USC 2703), to take prudent action to protect its subscribers' rights to privacy and to protect its proprietary ALI databases – except as mandated by Federal Law 47 USC 222 (g). When the Company or other local exchange carrier provides the ALI controller service to the Customer's PSAP, these requirements are met by the direct control that the Company or other local exchange carrier retains over the ALI software.

The Company will build and maintain the MSAG file in concert with the Customer utilizing standard service addresses (i.e., house numbers, street names, and postal communities).

EMERGENCY 911 SERVICES

E. Rules and Regulations (Continued)

E.3 Data (Continued)

Customer initiated changes and rearrangements to the MSAG that affect service address and ALI database records (e.g., street name and number changes, emergency services zone or name change, jurisdictional boundary changes and rearrangements, etc.) other than those processed in normal daily updates require a comparative listing of changes providing direct and individual reference to existing designations. Substantial MSAG changes (e.g., annexations of additional areas, reduction of existing areas) may require additional charges.

The Company will provide to the Customer, on request only, and limited to once per year, via electronic means only, one copy of the MSAG at no charge, to be used solely for the verification of emergency services routing designations for E9-1-1 Services. Customers of ALI Database Administration Service will always have unlimited electronic access to view ranges of their MSAG data at no additional charge. Customers requesting additional copies may do so by contacting the Company. Additional copies will be provided outside the scope of this tariff at an additional charge.

Company is not responsible when a 9-1-1 caller originates a call from a system or line which makes the provision of specific location information impossible to provide due to technical reasons or limitations, including but not limited to limitations on the ability to provide subscriber information in conjunction with multi-party lines, private telecommunications services (e.g., PBXs or shared tenant services) or 9-1-1 calls originating over Centrex service lines.

Company is not responsible for obtaining subscriber record information from private telecommunications systems (e.g., PBXs, or shared tenant service arrangements), and accepts no responsibility for such information unless provided to the Company by the Customer.

The rates and charges for E9-1-1 Service elements are based upon utilizing standard service addresses (i.e. house numbers, street names, and postal communities) in populating the DMS (Data Management System). Where such addressing is not available, the Company may deny the request for E9-1-1 service.

EMERGENCY 911 SERVICES

E. Rules and Regulations (Continued)

E.4 Customer Premises Equipment (CPE)

Terminal equipment may be provided by the Company or the Customer for E9-1-1 Service.

CPE must be compatible with the service and interface standards of the Company. Upon request the Company will make available standards for interface with CPE.

Any terminal equipment used in connection with E9-1-1 Service, whether such equipment is provided by the Company or the Customer, shall not be used to extract any information from the ALI Platform, whether obtained from the Company or not, other than information relating to an in progress 9-1-1 emergency call.

Customer may attach features, devices, or equipment of other vendors to Company-provided facilities, equipment and services provided such other features, devices, or equipment meet all applicable state and federal registration and certification standards. Company reserves the right to refuse such attachment if Company determines that such attachments will degrade the E911 Services or other Company facilities, services and telecommunications operations.

EMERGENCY 911 SERVICES

F. Customer Obligation

Application for E9-1-1 Service must be executed in writing by the Customer or Customer's authorized employee or representative. If execution is by an agent, satisfactory evidence documenting the agency relationship must be provided in writing to the Company. At least one local law enforcement agency must be included among the participating agencies in any E9-1-1 Service offering.

By subscribing to E9-1-1 service under this tariff, the Customer agrees to the provisions in this tariff concerning E9-1-1 Services and,

- The responsible local governmental authority must agree to provide personnel for 24-hour coverage, receive all 911 calls routed to the public answering point and subscribe to a sufficient number of lines to adequately handle incoming calls.

- The Customer accepts responsibility for dispatching, or having others dispatch law enforcement, fire, EMS or other emergency services as required to the extent such services are reasonably available.

- The Customer should develop an appropriate method for responding to calls for nonparticipating agencies which may be directed to the PSAP by calling parties.

EMERGENCY 911 SERVICES

F. Customer Obligation (Continued)

To the extent the Customer is subject to state or local governmental spending appropriations or limitations with respect to purchases of Service from this Tariff, the Customer will use all reasonable and lawful means to secure, on an initial and on-going basis, the appropriation of funds sufficient to pay for charges billed for Services provided. In the event appropriated funding for Services provided pursuant to this Tariff is withdrawn, reduced or limited, Customer will promptly notify Company, in writing, of Customer's intent to modify or terminate Services.

When the Selective Routing feature is provided, the customer is responsible for identifying primary and secondary Public Safety Answering Point (PSAP) locations as well as unique combinations of law enforcement, fire and EMS or any other appropriate agencies responsible for providing emergency service in the Enhanced 911 serving area. An Emergency Service Number (ESN) will be provided for each unique combination by the Company. The customer will associate these ESNs with street address ranges or other mutually agreed upon routing criteria in the E9-1-1 serving area. These ESNs will permit routing of E9-1-1 calls to the primary and secondary PSAPs responsible for handling of calls from each telephone in the E9-1-1 serving area. The following terms define the Customer's responsibility in providing this information.

- Initial and subsequent ESN assignments by street name, address range, and areas or other mutually agreed upon routing criteria shall be furnished by the Customer to the Company in a timely manner.

- After establishment of service, it is the Customer's responsibility to continue to verify the accuracy of the routing information contained in the Master Street Address Guide (MSAG) and to advise the Company of any changes in street names, establishment of new streets, changes in address numbers used on existing streets, closing and abandonment of streets, changes in law enforcement, fire, EMS or other appropriate agencies' jurisdiction over any address, annexations and other changes in municipal and county boundaries, incorporation of new cities or any other matter that will affect the routing of 911 Service calls to the proper PSAP.

- Changes, deletions and additions wanted by the Customer in the MSAG should be submitted as the changes occur.

- The Company will provide the changes to the Customer for verification showing each change, deletion and addition to the MSAG.

EMERGENCY 911 SERVICES

F. Customer Obligation (Continued)

In order for the E9-1-1 service features and functions to work properly, the customer must procure PSAP equipment with a capacity adequate to handle the number of incoming Enhanced 911 lines to meet network compatibility requirements, receive voice and ANI from 9-1-1 callers, provide the ability to retrieve information on a per call basis from an ALI system, and provide ANI and ALI display and control. It is the Customer's responsibility to procure, install, and maintain its PSAP equipment to be compatible with the Company's E9-1-1 service. Any Company changes are required to achieve compatibility with PSAP equipment may be provided, at the discretion of the Company, at the Customer's expense. Any additional cost associated with bringing incompatible PSAP equipment into compliance with the E9-1-1 system will be the responsibility of the Customer.

The Customer will conduct training to impress upon personnel the following:

- to ALWAYS ask for the Caller's address to confirm the ALI is correct, or in cases of ANI or ALI failures.

- the sensitive nature of the ALI database information and their legal obligation to protect it from unauthorized access.

EMERGENCY 911 SERVICES

G. Liabilities

G.1 Except for errors and omissions caused by gross negligence, willful or wanton misconduct, fraudulent conduct or violations of law by the Company, and, to the extent not caused by acts, omissions or other occurrences attributable to the Customer or any other person or entity, the Company's entire liability in tort, contract or otherwise for damages arising out of mistakes, interruptions, delays, failures, errors, acts, omissions, defects in transmission or other occurrences related to the Company's provision of this E9-1-1 Service is limited by the terms set forth in this Section and in other tariffs of the Company. This limitation of liability extends to, but is not limited to, claims in connection with designing, developing, installing, implementing, maintaining, or operating the 9-1-1 Service, attachment to, or use of any Customer-provided equipment in conjunction with the 9-1-1 Service, advice, recommendations or analysis provided, or for releasing subscriber information, including nonpublished or nonlisted information, in connection with the provision of the 9-1-1 Service.

G.2 For E9-1-1 Service provided pursuant to this Tariff, the Company's liability shall not exceed an amount equivalent to the proportionate charge to the Customer for the period of Service during which the mistake, interruption, delay, failure, error, act, omission, other occurrence or defect in transmission occurs after notice by the Customer to the Company. For other services used by the Customer in conjunction with the E9-1-1 Services, the Company's liability is stated in the applicable Company tariff as follows: (1) for local services and private line services provided solely within the same exchange area, the Company's liability will be as set out in Section 1.E.1 of this Company's General Regulations Tariff; for private line services provided between exchange service areas and other intrastate access services, the Company's liability is in Section 1.E.1 of this Company's General Regulations Tariff. Where credit allowances on monthly charges for service or service features are determined to apply, only those services or service features which are affected or diminished by the interruption shall be considered, and further, only those main stations on the interrupted portion of the service shall be considered in determining the number of main stations affected.

G.3 Company shall not be liable for, and no allowance or credit will be provided for, any interruption, delay, failure, errors, acts, omissions or other occurrences attributable to the Customer or any other person or entity.

G.4 In no event shall the Company be liable in tort, contract or otherwise for any personal injury, property damage or death arising out of or related to use of the E9-1-1 Service. Under no circumstance shall the Company be responsible or liable for special, indirect, incidental or consequential damages.

EMERGENCY 911 SERVICES

G. Liabilities (Continued)

G.5 To the extent permitted by applicable law, the Customer indemnifies and saves the Company harmless against:

G.5.1 Claims for libel, slander, or infringement or copyright arising from the material transmitted over its facilities;

G.5.2 Claims for infringement of patents arising from combining with or using in connection with facilities of the Company, apparatus, equipment or systems of Customer;

G.5.3 All other claims arising out of any act or omission of the Customer in connection with the service and facilities provided by the Company.

EMERGENCY 911 SERVICES

H. Description of Service Rate Elements

H.1. Pre-Basic 911

Pre-basic 911 service enables the routing of 911 calls to a designated telephone number provided by the County or State over the Public Switched Telephone Network (PSTN). This service is applicable in those Counties that that do not have Enhanced 9-1-1. Calls may be routed to the assigned telephone number from the local end office as follows:

- direct routing using the Remote Call Forwarding switch capability
- routing to the serving Company Selective Router, where the call is then switched to the assigned telephone number over Business dial tone lines or,
- to an Operator, who will then forward the call to the designated telephone number or agency.

There are no additional features with this service such as Automatic Number Identification (ANI), or Automatic Location Identification (ALI).

Rates and charges for Pre-basic 911 Service are the rates and charges shown elsewhere in the Company's tariffs for Remote Call Forwarding Service and Business Access Line Service depending on the facilities used to provide Pre-basic 911 service. Local usage and/or toll charges apply in addition to all other applicable rates and charges.

H.2 Enhanced 911 Service

Enhanced 9-1-1 (E9-1-1) Service is designed to enable a caller dialing 9-1-1 to reach a designated answering point, with the additional features of Automatic Number Identification (ANI), Automatic Location Identification (ALI), and Selective Routing (SR). E9-1-1 is the only form of emergency telephone service provided by the Company. Thus, all references to 9-1-1 refer to E9-1-1 Service.

E9-1-1 Service is comprised of the following components:

H.2.1 Automatic Number Identification (ANI)

Provides the telephone number associated with the access line from which a call originates, if available. This is an inherent feature of E9-1-1 Service, and is included in the E9-1-1 trunking rate elements.

H.2.2 Automatic Location Identification (ALI)

Provides the location and other information of the calling number. ALI consists of:

EMERGENCY 911 SERVICES

H. Description of Service Rate Elements (Continued)

H.2 Enhanced 911 Service (Continued)

H.2.2 Automatic Location Identification (ALI) (Continued)

H.2.2.1. ALI Database Administration

ALI Database Administration is the processing of subscriber records against the Master Street Address Guide (MSAG) for the creation of ALI records and/or the creation of Selective Routing records. ALI Database Administration includes the following:

- Provides for daily database processing and updates for ALI storage and the Selective Routing Data Base (SRDB) platforms for all add, delete and change activity associated with subscriber or other service provider records.
- Provides processing of subscriber records against the MSAG.
- Provides for the creation of a file containing the updated records.
- Is used for updates to the SRDB.

H.2.2.2 Centralized Automatic Location Identification (CALI) System

Centralized Automatic Location Identification (CALI) System consists of two host machines, one being the primary system and the other being the secondary system. The Public Safety Answering Point (PSAP) sends a query to both machines to retrieve ALI. The primary system returns the ALI and sends a confirmation to the secondary system that it has delivered the ALI. If the secondary system does not receive this confirmation, it will also send the ALI. ALI rates are inclusive of the network connections between the primary and secondary CALI systems to allow the two machines to communicate to each another. All other network connections needed for steering are the responsibility of the customer or their Provider (Competitive Local Exchange Carrier, Third Party Database Provider, etc.) that requires steering. The PSAP must also purchase two 9.6 Kbps or higher circuits from the PSAP location, one to the primary CALI system and the second one to the secondary CALI system. ALI Database Administration is used to provide input to CALI services.

EMERGENCY 911 SERVICES

H. Description of Service Rate Elements (Continued)

H.2 Enhanced 911 Service (Continued)

H.2.2 Automatic Location Identification (ALI) (Continued)

H.2.2.2 Centralized Automatic Location Identification (CALI) System (Continued)

CALI Storage / Processing

The CALI system stores the ALI database for subscribers in areas where the Company is selected to be the 9-1-1 Database Provider. CALI will process ALI in two ways:

- Upon receipt of an ALI query by the PSAP, using the ANI, to the CALI platform, the CALI database will respond with the matching ALI if it resides on the CALI platform, and will process it back to the requesting PSAP.

- The CALI can also be directed by the ANI to steer to another ALI database to retrieve the appropriate ALI record. The record when received by the CALI platform from the other ALI database is processed back to the requesting PSAP.

If Steering is needed for CALI Storage/Processing, the customer must provide an initial certified record count for the number of records it has in the other database. This record count must be provided to the Company for billing purposes on the customer's letterhead signed by the individual authorized to execute contracts on behalf of the customer. The Company will use this record count only for purposes of billing for CALI Storage / Processing. The customer must update this certified record count for steering to another database on an annual basis, or a 10% annual increase will be assigned.

H.2.2.3 Centralized Automatic Location Identification (CALI) System for Wireless Location Identifications

Upon receipt of an ALI query from the PSAP, the Centralized Automatic Location Identification System will respond with geographic information such as cell site/sector associated with the ESRN, or upon receipt of an ALI query, the system will be directed to query a third party system to retrieve geographic information such as longitude/latitude coordinates of the wireless caller. The information, when received from the third party system, is processed back to the requesting PSAP.

EMERGENCY 911 SERVICES

H. Description of Service Rate Elements (Continued)

H.2 Enhanced 911 Service (Continued)

H.2.3 Tandem Selective Routing

Selective Routing is performed by Selective Routers, also called 9-1-1 Tandems. End offices have circuits connecting them to the Selective Routers and pass the ANI over those circuits. The ANI is looked up in the Selective Routing Database (SRDB) to determine which PSAP to deliver the voice call and ANI via the voice path to the PSAP.

The Company offers Dual Selective Routing for E9-1-1 Selective Routing Service. It includes all the standard features and, in addition, links two Selective Routers. This architecture, using two Selective Routers with mirror imaged databases, provides a higher level of network reliability that will allow the completion of E9-1-1 calls to the target PSAP in the event of a major outage at one of the E9-1-1 Tandems. End offices have circuits connecting them to each of the Selective Routers. In addition, there are circuits provisioned between the E9-1-1 tandems to allow calls to switch to the other E9-1-1 Tandem if there are no circuits available to the target PSAP. This provides an additional network path to complete the call to the target PSAP. Since each end office has a trunk group to each Selective Router, the architecture also allows calls to be completed in the event of a major facilities failure between the end office and one of the Selective Routers. Information passed over the network during call set-up includes the ANI for wireline call. Once the call is received at the E9-1-1 tandems, the ANI is looked up in the Selective Routing database (SRDB) to determine which PSAP to deliver the voice call. ANI is delivered via the voice path to the PSAP. As stated above, Dual Selective Routing includes all standard features, including Alternate and Default Routing (in the event of ANI failure, garbled digits, or other causes) of E9-1-1 calls.

The Customer must subscribe to trunking from each PSAP to each pair of E911 Tandems, and to additional Tandems, as needed.

H.2.4 Wireless Selective Routing

Wireless Service Providers interconnect facilities to the Company Selective Router(s). An Emergency Service Routing Number (ESRN), along with the voice connection, is sent by the Wireless Service Provider to the Selective Router. The Selective Routers use this number to determine routing and sends both the Emergency Service Routing Number and voice call to the appropriate PSAP. This service does not include dedicated circuits needed to connect Wireless Service Providers to Telephone Company Selective Routers.

EMERGENCY 911 SERVICES

H. Description of Service Rate Elements (Continued)

H.3 Disaster Recovery

H.3.1 Network Control Modem (NCM)

The Network Control Modem (NCM) provides disaster recovery capability by allowing persons holding the PSAP authorized IDs and passwords to reroute calls to a predesignated alternate answering point in the event of an emergency or for any other reason. The alternate answering point may receive the rerouted calls via the Public Switched Telephone Network (PSTN) or via 911 trunks, if the alternate location is served by the same pair of Selective Routers. With the dial-up NCM, the authorized PSAP representative may dial into the NCM from any telephone, pass multiple security checks using the PSAP-authorized Ids and passwords to activate the reroute of incoming 911 calls. The same process is used in deactivate the reroute. Toll calls will apply, if applicable, during a reroute.

The NCM :

- Provides the ability to send all 9-1-1 calls for one PSAP to an alternate answering point.
- Can be accessed from any telephone on the Public Switched Telephone Network.
- Provides multiple levels of security, so only persons holding the authorized IDs and passwords can activate or deactivate the reroute.

A NCM is required in each serving selective router and one business rate central office line is required for each NCM. For PSAPs that are served by more than one pair of Selective Routers, an additional NCM and business rate line, will be required for each Selective Router.

The NCM is available on a month-to-month or a three-year term basis. Customers who commit to a three-year term, will revert to the month-to-month at the expiration of the existing three-year term unless another three-year term commitment is made prior to the expiration of the existing three-year term.

EMERGENCY 911 SERVICES

G. RATES AND CHARGES

Service Features

	Monthly Rate	
(a) Pre-basic 911[1]		
(b) Enhanced 911		
Combined Automatic Number Identification, Automatic Location Identification, and Dual Selective Routing (ANI/ALI/SR) for Company access lines, per 100 records [2]	$13.50	
Combined Automatic Number Identification, Automatic Location Identification, and Dual Selective Routing (ANI/ALI/SR) for non-Company maintained 9-1-1 Database records, per 100 records [2]	$11.87	
ALI, per 100 records - (in the event the customer subscribes to the Company's Database Services)	$12.43	
Selective Routing and ANI, for Company access lines per 100 records - (in the event the customer wants to subscribe to the Company's Selective Routing Service. Includes the portion of the Company's Database service required to maintain the SRDB)	$11.16	
Selective Routing and ANI, for non-Company maintained 9-1-1 Database records, per 100 records[2] (in the event the customer wants to subscribe to the Company's Selective Routing Service. Includes the portion of the Company's Database service required to maintain the SRDB)	$8.90	
Combined Wireless Automatic Number Identification, Automatic Location Identification and Selective Routing (ANI/ALI/SR)		
Combined Wireless Automatic Number Identification, Automatic Location Identification and Selective Routing (ALI/ALI/SR), per 100 records[3]	$7.55	
Wireless Automatic Number Identification with Selective Routing (ANI/SR), per 100 records[3]	$4.75	
Wireless Automatic Location Identification (ALI), per 100 records[3]	$3.15	

Note 1: Rates and charges for Pre-Basic 911 Service are the rates and charges shown elsewhere in the Company tariffs for Remote Call Forwarding Services and Business Access Line Service depending on the facilities used.

Note 2: Rounded to nearest 100 Local Exchange Service lines. This count is based upon the maximum number of the preceding stated lines in service at the time of installation and is determined by the Telephone Company. This count will be adjusted annually to update customer billing.

Note 3: For billing purposes only, the count is based on the number of wireline records. This count will be adjusted annually to update customer billing.

EMERGENCY 911 SERVICES

G. RATES AND CHARGES (Continued)

Service Features (Continued)

Enhanced 911[1] (Continued)

	Monthly Rate	3-Year Rate
Trunking –		
(i) End Office to Selective Router, per trunk – (in the event the customer wants to subscribe to greater than P.01 grade of service)	$74.43	
End Office to Selective Router, per 100 records[2] – (in the event the customer subscribes to another carrier for SR/ALI)	$1.63	
(ii) Selective Router to PSAP, per trunk – for wireless call delivery or in the event the customer wants to subscribe to more PSAP trunks and/or in the event the customer has secondary, tertiary or Back-Up PSAPs,	$58.75	
Selective Router Trunk/Channel Interface Port, per DS0 Port (in the event the customer wants to subscribe to greater than P.01 grade of service) and/or (in the event the customer has secondary, tertiary or Back-Up PSAPs)	$19.68	
(iii) ALI Data Circuits, per pair (in the event the customer wants to subscribe to more than one pair of ALI ckts, or has a secondary PSAP – includes CALI System port)	$211.04	
Disaster Recovery Network Control Modem, per Tandem[3]	$97.47	92.60

Note 2: Rounded to nearest 100 Local Exchange Service lines. This count is based upon the maximum number of the preceding stated lines in service at the time of installation and is determined by the Telephone Company. This count will be adjusted annually to update customer billing.

Note 3: A NCM and a business rate line (SCC VA No. 22, Section 1 and Section 2) are required for each Selective Router serving the PSAP.

Exhibit 6

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

DA 11-328

February 17, 2011

Kathleen M. Grillo
Senior Vice President
Public Affairs, Policy & Communications
Verizon Communications
1300 I St. NW, Room 400W
Washington, DC USA 20005

Re: Failed 9-1-1 Calls During January 26, 2011 Snowstorm

Dear Ms. Grillo,

The FCC has received reports that during the snowstorm that hit the Washington D.C. region on January 26, 2011, approximately 8,300 wireless 9-1-1 calls to the Montgomery County Public Safety Answering Point (PSAP), routed over the Verizon network, were not connected, and an additional 1,700 wireless calls to the Prince George's County PSAP were not connected. I know that you will agree that any 9-1-1 call which is not connected can have serious consequences, but the large number of missed 9-1-1 calls on January 26 is truly alarming. I therefore request that Verizon provide an explanation of the causes of this and similar failures, provide Verizon's assessment of the possibility of occurrence in other locations and describe what actions Verizon is taking to prevent recurrence of these problems.

Here is a synopsis of what we understand so far. Through our initial discussions with various parties, including representatives of Verizon, we have learned that the Montgomery County PSAP has fourteen trunks that handle wireless calls, seven each from the Rockville and Hyattsville Selective Routers. The trunks from these Selective Routers to the PSAPs are maintained by Verizon (not Verizon Wireless), and there are separate trunks for wireline, wireless and VoIP calls. At approximately 5:15 p.m. on January 26, Verizon's system automatically took one of the wireless 9-1-1 trunks out of service. It is our understanding that this was not an overload. We understand that it is normal in large-scale emergencies for the call volume to exceed the trunk capacity, in which case calls will be blocked until another trunk opens up. In this instance, however, the Verizon system took each of the fourteen trunks handling wireless calls out of service sequentially so that they could not receive any more calls. By 8:45 p.m., the problem had cascaded to the other thirteen 9-1-1 trunks handling wireless calls, so that all of the trunks handling wireless 9-1-1 traffic in Montgomery County were taken out of service by the system.

These trunks have working alarms, but Verizon did not notify the PSAPs of the failure after the alarms went off. The Montgomery County PSAP recognized the problem just prior to 11:00 p.m. and notified Verizon. By 11:15 p.m., Verizon had placed all the trunks back into service.

Similarly, eight of the ten trunks that serve wireless calls for the Prince George's County PSAP were taken out of service automatically by Verizon on January 26 by approximately 8:30 p.m. A ninth trunk was taken out shortly thereafter. Four were restored by 10:30 p.m.; all trunks were finally restored by approximately 11:00 p.m.

It is not clear what caused these individual trunks to be taken out of service. Your experts have postulated that the increased call volume resulting from the snowstorm created a timing problem on the trunks which caused them to be automatically taken out of service. However, the Private Branch Exchange (PBX) in the Montgomery County PSAP is a relatively new CS100OE, which has the speed and capacity to handle the number of calls that were being routed. The Prince George's County PSAP's PBX is older, but since the PBX has fewer trunks connected to it, the PBX should be able handle the call volume. The slow response of the PBX's does not appear to be the cause of the failures.

I would note that the events of January 26 are not unique and that other similar 9-1-1 outages have occurred recently in the region. On December 17th, 2010, the Prince George's County PSAP and on July 25, 2010, the Montgomery County PSAP experienced similar outages. The July 25, 2010 incident resulted in delayed urgent medical attention for a caller who was unable to reach 9-1-1. In all cases, Verizon did not notify the PSAPs when the outages occurred. Instead, the PSAPs became aware of the outages only when they received complaints from callers or were notified by another PSAP. The PSAPs then notified Verizon.

We are particularly concerned that this problem may be widespread across Verizon's footprint. We therefore request that Verizon investigate the extent of the problem across its network and provide the following information by March 10, 2011:

- Is this problem localized to the PSAPs off the Hyattsville and Rockville Selective Routers?
- Was this the same problem that occurred in Fairfax County, Virginia on January 26, 2011?
- Can this problem occur elsewhere in the nation?
- Has this problem occurred in other states and if so, in which states?
- Has this problem occurred with other brands of PBXs? Can it?
- Has this problem occurred when Centralized Automatic Message Accounting (CAMA) trunks are not used?

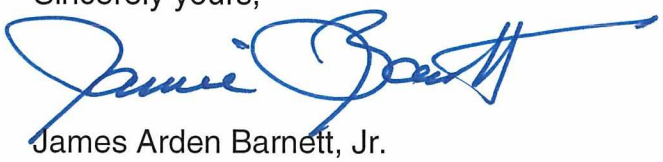
- Has this problem occurred only with certain types of Selective Routers?

In addition, we request that Verizon recommend potential remedial actions, including:

1. How Verizon will prevent trunks from being taken out of service during high calling events.
2. How Verizon will monitor the trunks to the PSAP and notify the PSAP when the trunks fail or are taken out of service. Verizon needs to explain how any new procedures ensure that the PSAPs are notified in a timely manner.
3. How Verizon can provide the PSAPs with their own monitoring capability. The PBX in the PSAP may be able to provide ongoing trunk statistics. Alternately, the PBX should be able to provide ongoing counts of wireline 9-1-1 calls and counts of wireless 9-1-1 calls.
4. Whether Verizon can use equipment other than CAMA trunks to connect Selective Routers to the PSAPs. The PBXs in the Montgomery County PSAP and Prince George's County PSAP have the capability to handle IP traffic.

The ability to call 9-1-1 is critical to the safety of the public. This is especially true during extreme weather events. The public rightly expects that they can use 9-1-1 to reach the appropriate first responders in an emergency. In addition to your written response, I request a meeting with appropriate representatives from Verizon within the next two weeks to discuss your resolution of this matter. Your office can contact Chantal Virgile at chantal.virgile@fcc.gov or (202) 418-0056 so that we can schedule the meeting at a mutually convenient time.

Sincerely yours,



James Arden Barnett, Jr.
Rear Admiral, USNR (Ret.)
Chief, Public Safety & Homeland Security Bureau

cc: Nneka N. Ezenwa
Federal Regulatory Affairs
Verizon Communications

Exhibit 7

R36-2012
July 11, 2012

METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS
777 North Capitol Street, N.E.
Washington, D.C. 20002

RESOLUTION TO ENCOURAGE STEPS TO ADDRESS VERIZON 9-1-1 SERVICE GAPS DURING AND FOLLOWING THE DERECHO STORM ON JUNE 29, 2012

WHEREAS, on June 29, 2012, the National Capital Region experienced unusually severe weather from Derecho storms which necessitated substantial mobilization of emergency personnel and equipment on that date and during subsequent days; however, both the public and local 9-1-1 offices were frustrated in obtaining and providing emergency responses by the periodic and extended failure of 9-1-1 service, on which the region depends; and

WHEREAS, Verizon's 9-1-1 service has previously and periodically failed, and local governments of the National Capital Region, their 9-1-1 centers and emergency managers, and the public have not been assured that the problems causing it to do so have been fixed; and

WHEREAS, the Board of Directors is extremely concerned that such gaps have occurred and increased the risks to the safety and lives of residents of the National Capital Region who have come to rely on such service; and

WHEREAS, COG has learned that the Commonwealth of Virginia State Corporation Commission has entered an order establishing an investigation regarding problems with 9-1-1 emergency call services within the Commonwealth from the June storms, and also that the Federal Communications Commission's staff will meet with carriers to explore the cause of service issues to 9-1-1 centers; and

WHEREAS, COG, through the work of its Chief Administrative Officers Committee and area 9-1-1 managers previously advised Verizon of its concerns with gaps in 9-1-1 service in 2011; and

WHEREAS, constant, reliable 9-1-1 service is a necessity for the National Capital Region, and the COG Board desires to strongly encourage steps which it believes will expedite addressing the gaps which have been experienced in such service at the Verizon, regional, state and national levels; and

WHEREAS, by separate resolution, the Board of Directors is addressing the need for an after-action report as a matter of preventive practice for future emergencies;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS (COG) THAT

1. LOCAL AND STATE GOVERNMENT TECHNICAL INPUT – The COG Board directs its technical and other committees with expertise in 9-1-1 service, telecommunications and related matters to compile, assess and identify actions required to address the 9-1-1 service issues during and following the June 29 storms. Participating committees include but are not limited to 9-1-1 directors, public information officials, chief information/technology officers and emergency management directors.

2. COMMITTEE WORK SCOPE AND OUTCOMES – The 9-1-1 Telecommunications Network Response Steering Group, comprised of technical committee representatives shall finalize and manage a scope of work that includes:

    a. Determine cause of Verizon's 9-1-1 failure;
    b. Examining existing redundancy and backup capabilities;
    c. Examine vulnerability of newer technologies that required battery or back-up power, including home and business service;
    d. Pursue opportunities for COG localities to influence and strengthen regulatory oversight and remedies at the state and federal levels; and
    e. Ensure improved communication or messaging from Verizon 9-1-1 to the public and to local emergency response officials concerning 9-1-1 Emergency Network service.

    The Steering Group shall Include participation and input by Verizon and state and federal regulatory and oversight agencies, and report its findings and recommendations to the COG Board no later than October 31, 2012.

3. FUNDING RESOURCES – The COG Board authorizes the Executive Director or his designee to spend an amount not to exceed $50,000 in FY 2013 contingency reserve funding.

4. TRANSMITTAL – Copies of this resolution shall be transmitted to the Federal Communications Commission, the Mayor of the District of Columbia and Governors of the State of Maryland and Commonwealth of Virginia, state telecommunications regulatory and oversight agencies, the COG Chief Administrative Officers Committee, and the National Capital Region Emergency Preparedness Council.

The foregoing resolution was unanimously approved and adopted by the COG Board of Directors at its regular meeting held on July 11, 2012.

Barbara J. Chapman
Executive Board Secretary