

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

In the Matter of)	
)	
Rapidly Deployable Aerial Telecommunications)	PS Docket No. 11-15
Architecture Capable of Providing Immediate)	
Communications to Disaster Areas)	

COMMENTS OF AT&T

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TABLE OF CONTENTS

I. INTRODUCTION AND SUMMARY.....1

II. DISCUSSION4

A. Aerostats Using Commercial Spectrum Would Present Unacceptable Interference Concerns at the Worst of Times.....4

B. Dedicating Resources to Restore Commercial Service Using Aerostats Would Disrupt Terrestrial Network Restoration5

C. Aerostat Deployments for Commercial Service Would Have Limited Utility.....7

D. The Commission Should Limit its Focus on Aerostats to the Restoration of Public Safety Networks and Focus on Facilitating Access to Disaster Areas to Best Assist Commercial Provider Restoration Efforts.9

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AT&T Services, Inc. (“AT&T”) files these Comments in response to the Notice of Inquiry (“*Notice*”) released by the Federal Communications Commission (the “Commission”) pertaining to the deployment aerial telecommunications infrastructure (“aerostats”) to provide communications during emergencies.¹

I. INTRODUCTION AND SUMMARY

In the *Notice*, the Commission seeks comment on technical and operational issues associated with the deployment of aerostats to provide communications when terrestrial infrastructure is disrupted or disabled due to a natural disaster or other catastrophic event. This *Notice* follows a Public Notice issued by the Commission introducing the aerostat concept and seeking initial comments on that concept.² In response to the Public Notice, AT&T filed comments supporting the Commission’s efforts to facilitate the restoration of communications after a disaster, but explained that the Commission should focus its efforts to facilitate the rapid restoration of commercial communications after a disaster on means other than aerostats because airborne networks would

¹ Rapidly Deployable Aerial Telecommunications Architecture Capable of Providing Immediate Communications to Disaster Areas, PS Docket No. 11-15, *Notice of Inquiry*, 77 Fed. Reg. 35962 (June 15, 2012) (“*Notice*”).

² Rapidly Deployable Aerial Telecommunications Architecture Capable of Providing Immediate Communications to Disaster Areas, PS Docket No. 11-15, *Public Notice* (rel. Jan. 28, 2011).

interfere with terrestrial commercial networks, aerostats likely would not consistently deploy as quickly as expected after the disaster, and focusing on short-term restoration of communications using aerostats would disrupt commercial provider restoration efforts.³ AT&T continues to believe that aerostats have a very limited utility for restoring commercial networks and would be harmful to the restoration of commercial terrestrial networks and thus, AT&T opposes the use of aerostats to restore commercial networks following a disaster.⁴

Aerostats present numerous impediments to consistently and reliably replace commercial wireless networks following an emergency, even on a temporary basis. Supplementing commercial service with aerostats presents a major risk of significant interference to the parts of commercial networks that may remain operational during or are restored shortly after a disaster. Transmissions from aerostats would propagate into areas where operational base stations are located, interfering with provider's attempts to restore network operations in disaster areas and interfering with continuing operations adjacent to the disaster area. This interference risk cannot be eliminated.

Transmitting commercial frequencies from aerostats in disaster areas would also unnecessarily disrupt the restoration efforts of commercial providers by encumbering the frequencies needed by commercial providers to restore cell sites to full service. Even if some of the interference from aerostats could be mitigated, such mitigation would require substantial and continuous coordination with commercial providers, redirecting limited resources away from terrestrial restoration efforts.

³ Comments of AT&T, Inc., PS Docket 11-15 (filed February 28, 2011) ("AT&T PN Comments").

⁴AT&T's comments in response to the Public Notice advocated that the Commission could best facilitate public safety communications during an emergency by supporting the reallocation of the Upper 700 MHz D-Block to public safety. AT&T explained that providing sufficient spectrum for first responders would support the deluge of communications that often occurs during critical restoration periods. In the Middle Class Tax Relief Act of 2012, Congress reallocated the D-Block to public safety.

Moreover, aerostats used to deploy commercial services would have limited utility. For various reasons, they often would not be deployed to restore commercial service in the hours after a disaster as contemplated by aerostat proponents. Many disasters, such as tornados and earthquakes, cannot be predicted and preparing the aerostat for deployment in the disaster zone with no advance preparation would consume the valuable time of those responsible for restoring the network when their focus on terrestrial network recovery is most crucial. Even where a potential disaster zone could be predicted, as may be possible for a hurricane, residual stormy conditions and high winds after the disaster event could prevent deployment for several days (or limit deployment to certain windows of time) whereas terrestrial restoration efforts can continue and advance considerably during those time periods.

Further, the complexity of commercial networks would make it difficult to coordinate with all commercial providers and public safety organizations in sufficient time to deploy aerostats quickly to supplement commercial service. Although advance preparation would help, coordination could still not be accomplished until commercial providers know if their networks are disabled, the extent and likely cause of the problem, and the estimated time needed to restore, information that may not be available until the disaster event has passed. Also, it is unlikely that aerostats could reliably provide broadband commercial service because the finite capacity of a cell site would be spread over a larger area with the same or increased demand.

This limited utility of aerostats balanced against the substantial costs that would be incurred in keeping the aerostats maintained and upgraded to supplement ever-evolving commercial networks, weighs against deploying aerostats for commercial service. In contrast, focusing on restoring terrestrial commercial networks as quickly as possible would be the most effective means to serve the public during and following a disaster event. To foster the quickest restoration of commercial

networks following a disaster, the Commission should take action to facilitate access to the disaster area by commercial providers. Commercial providers face obstacles to accessing disaster zones, some of which could be resolved with Commission assistance.

The Commission should focus its efforts to restore communications via aerostats on public safety networks. Unlike the challenges associated with supplementing commercial networks with their multiple frequency bands and air interfaces, public safety networks are more homogenous, utilizing common frequency bands and in the future, an interoperable broadband network. Thus, coordination of public safety networks with aerostats intended solely to supplement those public safety networks could be performed much more easily and quickly than with commercial networks. The deployment of aerostats for public safety networks would be more akin to military deployments of aerostats, which the Commission has recognized in the *Notice* have been successful.

II. DISCUSSION

A. Aerostats Using Commercial Spectrum Would Present Unacceptable Interference Concerns at the Worst of Times.

AT&T has explained the interference risks that would present with the deployment of aerostats using commercial frequencies.⁵ These concerns are not to be discounted. It is the exception, rather than the rule, that a disaster causes wholesale or widespread service disruption of commercial service during and following a disaster. More often, service disruptions are sporadic, with disabled cell sites dispersed throughout a commercial provider's coverage area. Typically, during and following a disaster, commercial service remains operational in large portions of the disaster area and, in those areas where commercial service is disabled, many cell sites are quickly restored soon after the disaster, in the same or less time than an aerostat could be deployed. As CTIA explained, "in the immediate wake of Hurricane Katrina, thousands of cell sites in the affected areas

⁵ AT&T PN Comments at 3-5.

remained operational at the same time that the wireless industry was able to repair damaged cell sites and switches, put up new cell sites, and distribute over 25,000 wireless phones to individuals in the affected area.”⁶ Of course, commercial provider networks also remain operational in areas adjacent to the disaster zone.

Attempting to deploy a supplemental commercial wireless network over the same geographic area as a commercial provider’s existing network would greatly interfere with surviving and quickly restored cell sites and the communications that would occur at those cell sites. No amount of coordination would allow two separate networks—a commercial terrestrial network and an airborne network—using the same frequencies to operate in tandem over the same geographic area without interference and in a manner that would allow for the reliable communications that would be needed and expected following a disaster event. This interference would impede the ability of commercial providers and their customers to rely on the operational portions of commercial networks to support recovery efforts following a disaster, including communications of public safety agencies that may rely on commercial networks, and to communicate with friends, family, and employers.

B. Dedicating Resources to Restore Commercial Service Using Aerostats Would Disrupt Terrestrial Network Restoration.

In comments in response to the Public Notice, CTIA cautioned the Commission against taking any action that would undermine commercial wireless networks.⁷ AT&T shares CTIA’s concern and believes that the deployment of aerostats for commercial services would, in fact, undermine commercial wireless networks by impeding a commercial provider’s ability to restore those networks. Problems in finding clear, unencumbered spectrum, would delay commercial providers from restoring their networks if forced to compete with airborne networks operating on the same frequencies. For

⁶ Comments of CTIA—The Wireless Association, PS Docket 11-15, at 5 (filed February 28, 2011) (“CTIA Comments”).

⁷ CTIA Comments at 3.

example, restoration efforts following Hurricane Katrina were periodically delayed because AT&T had to devote time and efforts to vacating spectrum that, although licensed to AT&T, was being broadcast by third parties without notice or authorization.

Using aerostats for commercial service would further undermine commercial providers' terrestrial network restoration efforts by diverting time and resources away from those efforts. AT&T operates an industry leading Network Disaster Recovery (NDR) program to restore AT&T voice and data service network elements to an area affected by a disaster as quickly as possible. The NDR program includes over 320 pieces of equipment, including large power and support trailers, cells-on-wheels ("COWS"), cells-on-light trucks ("COLTS"), emergency communications vehicles, hazmat trailers and escort vehicles along with substantial training and exercises using qualified personnel.⁸ AT&T's NDR program, and similar programs established by other commercial wireless providers, have a demonstrated ability to restore communications without significant delay. As CTIA explained,

The Commission has recognized the value that commercial wireless services provide to residents, aid workers, and first responders in the aftermath of disasters. For example, the Commission has acknowledged the role that wireless services played on September 11, 2001, notifying first responders and medical personnel of the urgent need for their services and aiding the restoration and security efforts across all levels of government.⁹

Following disaster events, commercial provider efforts should remain focused on restoring their commercial networks, without the hindrance of coordination and possible interference with network architecture deployed over aerostats. Deploying commercial service via aerostats would require substantial and continuous coordination and management with commercial wireless providers to mitigate the interference to commercial networks that remain operational adjacent to and within the

⁸ http://www.corp.att.com/ndr/team_equipment.html.

⁹ CTIA Comments at 2.

disaster area. That level of continuous coordination would divert the time and efforts of key employees away from the implementation of AT&T's NDR program toward the coordination of aerostats, a diversion that may generate little benefit.

In the *Notice*, the Commission mentions the importance of preparation prior to a disaster to any aerostat program.¹⁰ Certainly, advance preparation is always helpful, but even advance preparation would divert commercial providers' attention and resources from their own NDR program preparation. Further, no amount of advance preparation eliminates the need for major and continuous coordination during and following the disaster event, when commercial providers' efforts should be focused on restoring their terrestrial networks. Many disasters, such as earthquakes, cannot be predicted, preventing any significant amount of advance preparation. Even if a disaster and the disaster area can be predicted, such as may occur with a major hurricane, commercial providers would not typically know before a disaster hits whether their networks will be impacted, the extent of the impact, or where the impact will occur. Consequently, the majority of the coordination that would be needed to facilitate the deployment of aerostats to supplement commercial networks, and commercial providers' involvement in those coordination efforts, would by necessity occur during and immediately after the disaster event, the most crucial time in commercial providers' efforts to restore their terrestrial networks. No program should displace or hinder these disaster recovery programs adopted by commercial providers.

C. Aerostat Deployments for Commercial Service Would Have Limited Utility.

AT&T has questioned whether aerostats could be deployed "within the first few hours" of a disaster because of the inability to predict the location of many emergencies and the specific location

¹⁰ *Notice* at 6, ¶16.

of networks that are damaged.¹¹ As referenced above, widespread service outages are quite rare and service outages are experienced on a sporadic basis and to different degrees by different providers. Coordinating the use of aerostats for commercial service in this environment would take a substantial amount of time. The differing spectrum holdings and air interfaces for each wireless provider would complicate coordination even further, and preclude the deployment of aerostats in short order. Further, even in those situations where a natural disaster can be foreseen and recovery resources placed to prepare for restoration efforts, such as may occur with a hurricane event, adverse weather conditions may continue for many hours or days after the initial event, precluding or limiting the deployment of aerostats. These factors limit the utility of aerostats to supplement commercial service.

The utility of aerostats is further limited by its finite capacity. A cell site has a finite capacity to handle wireless traffic, especially broadband communications such as video. Placing the cell site on an aerostat would spread that finite capacity over a larger geographic area, resulting in lower capacity per square mile. Consequently, an area that may have been served by a dozen or more cell sites may be temporarily replaced by a single aerostat or at best, a few aerostats. In geographic areas with a dense penetration of wireless devices, it is likely that an airborne commercial network with finite capacity would be quickly overwhelmed, especially in light of the tremendous increase in network demand experienced by commercial providers following a disaster, which tends to strain even operational terrestrial networks.

Further, the cost to keep aerostats equipped to supplement commercial service would likely substantially outpace their limited utility. Commercial wireless providers are constantly upgrading their networks to operate on new spectrum and in new air interfaces. In the last ten years, commercial

¹¹ AT&T PN Comments at 6.

provider networks have transitioned from analog to digital TDMA to GSM to UMTS and to LTE and introduced 700 MHz and AWS spectrum to operate with 850 MHz cellular and 1900 PCS services. These dynamic networks will likely evolve even further in the future, as more spectrum comes available and commercial providers deploy that new spectrum and new air interfaces to meet the capacity and marketplace demands of their customers. Similarly, aerostats seeking to supplement that commercial service would have to evolve and upgrade. In fact, aerostats that support commercial services would have to support each wireless provider's choice of spectrum and air interface, as it is impossible to predict the commercial providers that will experience a network outage in an emergency. AT&T questions whether any public safety organization tasked with deploying and operating aerostats could keep pace with the level of technological change that occurs with commercial provider networks.

D. The Commission Should Limit its Focus on Aerostats to the Restoration of Public Safety Networks and Focus on Facilitating Access to Disaster Areas to Best Assist Commercial Provider Restoration Efforts.

For the reasons explained above, aerostats should not be used to deploy an airborne network using commercial frequencies. Commercial providers have extensive recovery and restoration equipment and programs and overall, are capable of restoring communications within a reasonable timeframe following a disaster scenario. Bringing aerostats into the equation during recovery periods would impede commercial providers in this effort. Instead, the Commission should limit the use of aerostats in and following emergency situations to supplement public safety networks. In contrast to commercial providers, state and local public safety entities have a less developed network recovery ability and thus, the use of aerostats would be less likely to interfere with their recovery efforts.

Further, for most disasters, the aerostats would be replacing or supplementing limited public safety networks, most of which work on common spectrum and protocols. And, with the allocation of the Upper 700 MHz D-Block to public safety, the future public safety broadband network will be interoperable, and thus, aerostats designed to operate on such a network would be usable throughout the country with minimal modification. Due to these factors, the deployment of aerostats for public safety networks would be more akin to military deployments of aerostats, which the Commission has recognized in the *Notice* have been successful.¹² To the extent that aerostats are able to temporarily restore communications for public safety networks that have been damaged or destroyed in a disaster, the aerostats would be focused where they should be, on assisting public safety organizations in responding to emergency and post-emergency situations.

The Commission can also facilitate the restoration of commercial networks by working with the Department of Homeland Security and State and local public safety officials to facilitate access to disaster areas during and after disasters for commercial wireless providers, other telecommunications providers, electric companies, and other utilities. Commercial wireless providers, other telecommunications providers, electric companies and other utilities are often unable to access an area to restore cell sites due to access restrictions and security concerns. There currently is no standard protocol, such as a credentialing criterion, to facilitate access in a manner that overcomes these concerns. AT&T would encourage the Commission to focus its efforts to restore commercial wireless service on this important area.

¹² *Notice at 5, ¶10.*

July 25, 2012

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Robert Vitanza", with a long horizontal flourish extending to the right.

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