

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of)	
)	
Reliability and Continuity of Communications Networks, Including Broadband Technologies)	PS Docket No. 11-60
)	
Effects on Broadband Communications Networks of Damage or Failure of Network Equipment or Severe Overload)	PS Docket No. 10-92
)	
Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks)	PS Docket No. 06-119
)	

To: The Commission

**REPLY COMMENTS
OF THE
AMERICAN PETROLEUM INSTITUTE**

The Telecommunications Subcommittee of the American Petroleum Institute (“API”) is pleased to submit these Reply Comments in response to the Commission’s Notice of Inquiry regarding the reliability and resiliency of communications networks.¹ API welcomes the Commission’s continued efforts to explore the robustness of carrier infrastructure and particularly appreciates that the Commission has specifically inquired whether standards might be needed to ensure adequate levels of service to meet the needs of critical infrastructure. This issue is of significant importance to API’s members.

I. Background

API is a national trade association representing more than 400 companies involved in all phases of the petroleum and natural gas industries, including exploration, production, refining,

¹ See Reliability and Continuity of Communications Networks, Including Broadband Technologies, Notice of Inquiry, PS Docket No. 11-60 (Rel. Apr. 7, 2011) (“Notice”).

marketing and transportation of petroleum, petroleum products and natural gas. Among its many activities, API acts on behalf of its members before federal and state regulatory agencies. The API Telecommunications Subcommittee evaluates and develops responses to state and federal proposals affecting telecommunications facilities used in the oil and gas industries.

API's members make use of a wide variety of wireline, wireless and satellite communications services on both a private and commercial basis and are authorized by the Commission to operate facilities in the Private Land Mobile Radio ("PLMR") service and Private Operational-Fixed Microwave Services ("POFS"), among other telecommunications systems.

API's members utilize PLMR systems, for example, to support the exploration and production of oil and natural gas, to ensure the safe pipeline transmission of natural gas, crude oil and refined petroleum products, to process and refine these energy sources and to facilitate their ultimate delivery to industrial, commercial and residential customers. POFS is used for communications with remote oil and gas exploration and production sites for voice and data applications, communications with refineries, the extension of circuits to remote pipeline pump and compressor stations, and supervisory control and data acquisition systems ("SCADA") that remotely monitor and control oil and gas wells, pipeline operations and other facilities.

API members also heavily rely on common carrier services to satisfy communications requirements, particularly for enterprise and mobile office applications. Commercial networks are used in rural and remote areas where available either as the primary communications link or as backup to provide redundant communications paths.

II. Recent Events Highlight the Concerns with Sole Reliance on Commercial Networks and the Need for Critical Infrastructure's Continued use of Private, Internal Networks.

As these Reply Comments were being prepared, a 5.8-magnitude earthquake centered near Mineral, Virginia, shook Washington, D.C. and much of the northeastern United States. Although a relatively minor earthquake in seismological terms, the event resulted in a severe disruption to commercial wireless service. Commercial carriers do not appear to have reported infrastructure damage from the quake. Instead, communications “simply got jammed because everyone tried to call at the same time.”² Contrast this with private, internal systems, which reportedly did not experience issues after the earthquake.³

Only a few days later, another large natural disaster, Hurricane Irene, knocked approximately 6,500 commercial cell sites out of commission.⁴ Service was cut to more than 210,700 wireline connections.⁵

This story repeats itself regularly after natural disasters,⁶ yet carriers in this proceeding paint a rosy picture of network reliability.⁷ This carrier mindset underscores the fact that while the oil and natural gas industry is a significant user of commercial networks for enterprise use,

² See Cecilia Kang and Ylan Q. Mui, Cellphone Service Falls Short After Earthquake, Washington Post (August 23, 2011) (http://www.washingtonpost.com/business/economy/cellphone-service-falls-short-after-earthquake/2011/08/23/gIQAml52ZJ_story.html).

³ See Brendan Sasso, FCC: Emergency Phone Systems Worked as Planned After Quake, The Hill (August 27, 2011) (<http://thehill.com/blogs/hillicon-valley/technology/178447-fcc-emergency-phone-systems-worked-as-planned-during-earthquake>).

⁴ See Matt Hamblen, Irene's Wrath Leaves 6,500 Cell Towers Out, ComputerWorld (August 29, 2011) (http://www.computerworld.com/s/article/9219567/Irene_s_wrath_leaves_6_500_cell_towers_out_FCC_says).

⁵ *Id.*

⁶ See Michael S. James, Phone Home During Emergency? Don't Count on It, ABC News (<http://abcnews.go.com/Technology/story?id=3446088&page=1>); See also Roxana Hegeman, Back-to-back disasters show cell gaps, Associated Press (http://www.usatoday.com/tech/wireless/phones/2007-05-27-cellphone-gaps-disasters_N.htm); John Cheves, Bill Estep and Ryan Alessi, Ice storm wreaked havoc on Kentucky communications, Lexington Herald-Leader (<http://www.theolympian.com/795/story/756444.html>).

⁷ See Comments of United States Telecom Association (“carriers have demonstrated the resiliency and robustness of their broadband networks during several large scale emergencies in recent years.”); Comments of AT&T (“experience shows that existing broadband networks generally function effectively and are well-protected against threats of physical damage and severe overload.”)

private internal systems will be required for the foreseeable future for core mission critical communications that are used to ensure the safety of life and property.

Rather than allocating adequate spectrum for Critical Infrastructure use, however, the FCC for years has routinely required private radio users – such as oil and gas companies and electric utilities – to *vacate* spectrum as a means of accommodating the entry of new commercial providers serving mass markets. For example:

- Private microwave operators were required to vacate the 1850-1990 MHz band to accommodate new Personal Communications Services;
- Private microwave operators were required to vacate portions of the 2 GHz band to accommodate new Advanced Wireless Services;
- Private microwave operators were required to vacate the 12.2-12.7 GHz band to accommodate the introduction of Direct Broadcast Satellite Services; and
- Private mobile radio operators in the 800 MHz band were required to relocate to different frequencies in order to reduce interference caused by nearby commercial radio operators to public safety systems and licensing at 900 MHz was frozen.

The result is that as the oil and gas industry seeks to move towards next generation applications to increase efficiency, effectiveness and safety, they are left without the necessary spectrum tools to do so. Current Commission policy has left the industry with few if any options for higher speed, point-to-multipoint private communications systems outside of the unlicensed bands and those are increasingly congested – in part due to equipment compatibility issues.⁸

Other comments in this proceeding reflect the same concern that commercial networks, while very important to critical infrastructure companies, are not suited for all mission critical requirements.

⁸ The Commission examined this issue in its “Spectrum Etiquette” proceeding, which has not yet been resolved. *See* Modification of Parts 2 and 15 of the Commission’s Rules for Unlicensed Devices and Equipment Approval, Memorandum Opinion and Order and Further Notice of Proposed Rule Making, ET Docket No. 03-201, FCC 07-117 (Rel. June 22, 2007).

As the Edison Electric Institute notes, “[w]hile commercial systems are well-built, and are more than sufficient to meet the requirements and needs of most businesses and residential subscribers, they sometimes fall short of meeting public safety needs and the needs of most critical infrastructure.”⁹ The Utilities Telecom Council espouses a similar view that “utilities and other critical infrastructure industries (CII) are concerned about the capability of carrier networks to meet utility standards for communications reliability. That is one of the main reasons why utilities rely on their own private internal communications networks, even though they do use commercial communications networks to meet some of their communications needs.”¹⁰

These comments accurately emphasize the importance of this issue. In many ways, commercial communications networks are a key tool for the oil and natural gas industry. Particularly in the case of the major carriers, however, they are large, complex systems. Though apparently reliable as a whole, any portion of the network may be subject to failure. An outage such as a fiber cut at one network node can have widespread impacts. When failure occurs, the carrier controls restoration and prioritization. The use of private, internal systems ensures that the user designs and implements necessary robustness, complexity (simplified systems may be more suitable for critical links), and manages radio use and priority. As a result, there are certain mission critical services for which availability is so vital to safety of life and property, that private, internal systems must be used.

III. The Commission Should Examine Carrier Reliability on a Granular Level to Obtain a Clear Picture of Network Reliability.

The Notice contains a number of questions regarding ways to improve the reliability of commercial networks. The Notice asks whether the Commission should “encourage

⁹ Edison Electric Institute at 2.

¹⁰ Utilities Telecom Council comments at 2.

communications service providers to take appropriate measures, on a voluntary basis” or whether increased regulation would be more effective. The Commission asks about reporting requirements, particularly in the context of backup power. The comments from carriers in this proceeding tend to respond to the Commission’s inquiries in terms of their networks as a whole, and not any particular point on the networks.

Many of the areas that the oil and natural gas industry operates are in rural and remote areas, far removed from the population centers and interstate highways served by carriers. In many instances, production fields are located in areas miles from electrical service and are served by on-site power (e.g., solar) provided by the customer. This is true for wireless networks, but also for wireline service provided via fiber where there is not DC power “riding the line.” Commercial service, which is spotty or non-existent, simply is not an option.

Likewise, in many instances security/reliability prevent the public Internet, and Internet based services such as DSL, broadband cable modem, wireless internet broadband and internet VSAT, from serving as a transport medium for mission critical SCADA, control systems, or measurement data.

Availability directly relates to the question of whether commercial services are reliable. Whereas metropolitan areas are served by multiple carriers, oil and natural gas facilities in rural areas are often served by a single local exchange company. It is not possible (certainly without exorbitant build-out costs) to implement redundant wireline service since ultimately only one circuit route and central office facility is available. Similarly, cell tower reliability cannot be guaranteed due to non-redundant carrier equipment or insufficient battery backup¹¹ and there is no prioritization control for traffic over the carrier’s network (which may be congested by real-

¹¹ Insufficient refers to design capability but also battery maintenance, fuel status, etc.

time entertainment/streaming video, peer-to-peer file sharing, web browsing, etc). Often the only feasible way to obtain acceptable reliability is to construct a private communications system.

It may be true at the macro level when Verizon, for example, comments that its “legacy voice, wireless, and broadband networks have significant redundancy and other protective measures in place to keep the networks up or to quickly restore them during disasters and severe overloads.”¹² There may be significantly less redundancy at the granular level of an individual cell site or customer facility.¹³

The Commission’s ongoing efforts should take into account that there likely is no “one size fits all approach” to resolving commercial network reliability issues. API recommends that the Commission request specific information from the carriers such as the number and location of sites served by backup power, backup battery and fuel maintenance practices, equipment redundancy in rural areas, and specific examples of service level guarantees offered to customers.

IV. The Commission Should Consolidate the Katrina Panel and Survivability Dockets Into This Proceeding.

The Commission seeks comment on its proposal to consolidate the record from PS Docket 10-92 (Effects on Broadband Communications Networks of Damage or Failure of Network Equipment or Severe Overload) and EB Docket 06-119 (Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks) into this proceeding and terminate those dockets as separate proceedings. API supports this proposal. API’s comments in

¹² Verizon Comments at 2.

¹³ For example, CTIA reportedly noted that the 6,500 cell sites impacted by Hurricane Irene constituted only 15% of the 46,000 cell sites that serve the 200 counties most severely impacted by the storm. That does not change the fact that anyone of those 6,500 sites could be used for safety of life purposes if the Commission does not preserve the option for private, internal communications. *See Communications Daily, Hurricane Irene Knocked Out Thousands of Cell Towers* (August 30, 2011).

those dockets regarding the specialized communications requirements of the oil and natural gas industry directly relate to the issues in this proceeding and will inform the Commission's inquiry into the reliability of commercial networks and the requirements of critical infrastructure companies.

V. CONCLUSION

API supports the Commission's efforts to further understand the resiliency of commercial broadband networks and urges the Commission to allocate spectrum for CII use consistent with the above comments.

Respectfully submitted,

**THE AMERICAN PETROLEUM
INSTITUTE**

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