

**AMERICAN PETROLEUM INSTITUTE
AND
ENERGY TELECOMMUNICATIONS AND ELECTRICAL ASSOCIATION**

October 31, 2012

***The Pressing Need for Spectrum
in the Energy Industry***

A shortage of radio spectrum is jeopardizing the energy industry's ability to continue developing energy resources safely and efficiently. Energy companies rely on a variety of communications systems authorized by the Federal Communications Commission to meet their private, internal communications requirements. These types of systems are used to serve a multitude of vital communications functions, including voice and data applications, supervisory control and data acquisition ("SCADA") communications with remote facilities, the extension of circuits to areas unserved by commercial carriers, monitoring, security and emergency response. Without an influx of additional spectrum, the energy industry's ability to continue providing these critical functions is questionable.

API. API is a national trade association representing more than 500 companies involved in all phases of the petroleum and natural gas industries, including exploration, production, refining, 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 is supported and sustained by companies that make use of a wide variety of wireline, wireless and satellite communications services on both a private and commercial basis. API member companies 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. Spectrum 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 SCADA that remotely monitor and control oil and gas wells, pipeline operations and other facilities.

ENTELEC. The mission of the Energy Telecommunications and Electrical Association ("ENTELEC") is to advance knowledge and ideas concerning the engineering, design, construction, maintenance, administration and operations of telecommunications, automation, electric power, information processing systems and other electrical and electronic facilities employed in the energy industries. Much of the association's focus is on communications and control technologies used by petroleum companies, natural gas pipelines and electric utilities. ENTELEC provides an educational platform for these industries, including technical presentations, equipment, exhibits and networking opportunities during the annual ENTELEC Conference & Expo and also advocates regulatory positions on their behalf (www.entelec.org).

The ENTELEC Regulatory Committee is a special committee of ENTELEC, established in 2011 to address regulatory requirements affecting the interests of the association's membership. Of particular concern to the Committee is the sufficiency of currently available radio spectrum resources to support the critical communications requirements of energy companies, including SCADA operations related to production fields, pipelines and other facilities in the oil and gas industry, as well as Smart Grid and other critical functions in the electric utility industry.

Energy companies implementing advanced communications systems are increasingly dependent on automation to provide their services safely, reliably and efficiently. Broadband radio spectrum is a key component in the development of these systems, enabling the energy industry to use wireless communications technologies that are potentially more cost-effective, scalable, reliable and secure than commercially available services or other alternative communications technologies.

Use of Spectrum by Oil and Gas Companies

From production fields to refineries, terminals, platforms and other facilities, petroleum and natural gas companies are pressed for spectrum to satisfy the need for person-to-person and machine-to-machine communications and to ensure safe, reliable and efficient operations of critical infrastructure.

For instance, approximately two-thirds of the energy supply in the United States is transported through pipelines.¹ There are roughly 170,000 miles of liquid pipelines, 295,000 miles of gas transmission pipelines and 1.9 million miles of gas distribution pipelines in the United States.² Pipelines covering thousands of miles must have equipment to control commodity movement, including pumps and compressors to provide force and valves to control pressure or change flow direction.³ Pressure, flow, heat and equipment integrity are continuously monitored and remotely controlled by personnel in central control rooms often located a significant distance from the subject pipeline. The availability of wireless spectrum is vital to this task.

In 2009, the Pipeline and Hazardous Materials Safety Administration ("PHMSA") issued a final rule amending the pipeline safety regulations governing control room management for pipelines where controllers use SCADA systems.⁴ The rule, as amended, mandated that by August 1, 2011, operators develop control room alarm management procedures and that they implement those procedures by August 1, 2012.⁵

¹ 74 Fed. Reg. 63311 (Dec. 3, 2009), amended by 76 Fed. Reg. 35130 (June 16, 2011).

² *Id.*

³ *Id.*

⁴ *Id.*

⁵ *Id.*

The PHMSA's rules require companies operating Liquid Natural Gas ("LNG") facilities to have two reliable forms of communications that are not dependent upon each other at its facilities.⁶ In addition, the PHMSA requires each operator of a pipeline facility⁷ to have a communication system that provides for the transmission of information needed for the safe operation of its pipeline system.⁸ The communications system must, at a minimum, (1) monitor operational data, (2) receive notices from personnel, the public and public authorities of any abnormal/emergency conditions, (3) provide two-way vocal communications between a control center and the scene of any abnormal/emergency situation, and (4) communicate with fire, police, and other appropriate public officials during emergency conditions.⁹

Additional requirements have been proposed. On January 3, 2012, President Obama signed into law H.R. 2845, The Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 ("Pipeline Safety Act").¹⁰ Section 4 of the Pipeline Safety Act requires that, within two years of enactment, the Department of Transportation pass regulations requiring oil and gas companies to implement automatic or remote-controlled shut-off valves or equivalent technology.¹¹

Use of Spectrum by Electric Utilities

Electric utilities, like the oil and gas companies, rely on spectrum to increase system automation, reliability, safety and efficiency. Electric utilities across the country are implementing Smart Grid and other advanced communications systems to become more efficient and responsive to consumers. At the same time, they are becoming progressively more dependent on automation to provide critical services.

In support of the trend toward automation, the FCC dedicated an entire chapter of its National Broadband Plan to spectrum options in support of smart grid deployment.¹² The federal government as a whole has invested billions of dollars in private companies, utilities, manufacturers and cities to aid in Smart Grid deployment.¹³

⁶ See 49 C.F.R. § 193.2519 (2010). This rule requires each LNG plant to have a primary communication system that provides verbal communication between plant personnel and plants with storage capacity in excess of 70,000 gallons to have a second communication system capable of providing verbal communications in the event of an emergency.

⁷ A pipeline facility is any new or existing pipe, rights-of-way and any equipment, facility, or building used in the transportation of hazardous liquids or carbon dioxide. 49 C.F.R. § 195.2 (2010).

⁸ 49 C.F.R. § 195.408(a) (2010).

⁹ 49 C.F.R. § 195.408(b) (2010).

¹⁰ Public Law No: 112-90.

¹¹ Pipeline Safety Act at §5.

¹² The National Broadband Plan is available at <http://www.broadband.gov/plan/> (last visited, October 7, 2011).

¹³ See, *Obama Announces New Recovery Act Smart Grid Funding - \$3.4 Billion*, available at <http://cleantechnica.com/2009/10/27/obama-announces-new-recovery-act-smart-grid-funding-34-billion/> (last visited October 7, 2011).

Spectrum Shortage

September 11th and Hurricane Katrina demonstrated all too clearly the critical need for energy industries to have access to reliable and secure communications over a hardened network during times of emergency to allow response activities essential to protecting safety and restoring service. To many energy companies, this type of reliability is dependent on sufficient spectrum resources to support it.

Unfortunately, over time, the FCC has reallocated large amounts of bandwidth away from the critical infrastructure industry to other services. As a result of these actions, there currently is a shortage of channels available to satisfy many of the energy industry's critical needs.¹⁴

For example, the licensed portions of the 2 GHz band, once the mainstay of long-haul Private Operational Fixed Microwave Services, is now allocated to Personal Communications Services (PCS), Advanced Wireless Services (AWS) and Mobile Satellite Services (MSS).¹⁵ Many former 2 GHz users tried to relocate to the 4 GHz and 6 GHz bands, the next-best options for long-haul links, but satellite earth stations, which are routinely coordinated and licensed for the entire band and satellite arc, block many coordination efforts in those bands. Fixed service coordination at 4 GHz has become all but impossible nationwide, due to the proliferation of registered receive-only satellite dishes. Uplink earth station congestion has made the lower 6 GHz band largely unavailable in and near major population centers. Just as troubling, in 2001 the FCC auctioned much of the multiple address service spectrum in the 928/952 and 932/941 MHz bands. This spectrum was one of the few options for exclusive point-to-multipoint communications and heavily relied on by the energy industry.

Energy companies must have sufficient bandwidth to meet their needs and allow these companies to avoid the interference and congestion problems they currently experience in sharing spectrum with incompatible radio operations. Energy companies need regulatory certainty, and access to dedicated spectrum exclusively for their use would provide the kind of regulatory certainty that would lay a solid foundation for the deployment of the Smart Grid and Digital Oil Fields. Dedicated spectrum would enable energy companies to deploy advanced communications systems enabling more automation and the provision of their services more safely, reliably, and efficiently

¹⁴ See e.g., Comments of the Utilities Telecom Council, RM-11429 (June 26, 2008). "The smart grid necessitates even more reliance on internal communications and IT networks than utilities already have, especially for data transmission. Much of the communication will be wireless; however, the critical infrastructure industries currently have no RF spectrum access to accommodate these needs."

¹⁵ See 47 C.F.R. § 101.69 (preamble) (reallocation of 1850–1990, 2110–2150, 2160–2200 MHz to PCS, AWS, MSS) (2010).

Access to dedicated spectrum on a nationwide basis is the best way to ensure that the energy industry can remain competitive and deploy the next generation of technology, including Digital Oil Fields and Smart Grids. The FCC and other government agencies need to ensure that these critical applications are supported by sufficient spectrum resources.

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James Crandall
American Petroleum Institute
1220 L Street, NW
Washington, DC 20005-4070
(202) 682-8000

Thomas Frobese, Chair
Kori Ugalde, Co-Chair
Regulatory Committee
Energy Telecommunications and
Electrical Association
5005 W. Royal Lane, Suite 116
Irving, TX 75063
(888) 503-8700

Jack Richards
Gregory E. Kunkle
Keller and Heckman LLP
1001 G Street NW
Suite 500 West
Washington, D.C. 20001
(202) 434-4100

Their Attorneys