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Statement of JP Brummond
Vice President, Business Planning, Alliant Energy
on Behalf of The Edison Electric Institute

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Panel III: Managing Changes in Communications Technology on the New Grid

Good Morning, I am JP Brummond, Vice President, Business Planning for Alliant Energy. On behalf of the Edison Electric Institute (“EEI”) and EEI’s members, thank you for the opportunity to participate in today’s technical conference. We appreciate this forum to discuss the challenges and opportunities we see due to recent proposed changes in federal communications policies and the associated potential impacts to the reliability of the electric grid.

Alliant Energy serves nearly one million electric and over 400,000 natural gas customers in Iowa and Wisconsin. Alliant Energy is dedicated to providing its primarily rural customers with electric and gas services in a safe, reliable and cost-effective manner.

EEI is the association that represents all U.S. investor-owned electric companies. EEI members provide electricity for about 220 million Americans and operate in all 50 states and the District of Columbia. As a whole, the electric power industry supports more than 7 million jobs in communities across the United States. EEI’s members are committed to providing affordable and reliable electricity to customers now and in the future. Additionally, EEI has long supported the goal of accelerating broadband deployment across the United States to meet the needs of the

public, particularly in underserved or unserved rural areas, balanced with the necessity of maintaining safe, reliable, secure, efficient, and resilient electric infrastructure, including electric company private wireless networks.

Regarding the issues raised for discussion during the third panel, I will focus on the growing interdependency of electric and communications infrastructure. In particular, electric company wireless communications requirements are growing while available licensed spectrum is increasingly scarce. Accordingly, EEI joins with the Utilities Technology Council (“UTC”) to urge the Commission to improve coordination with the Federal Communications Commission (“FCC”) on areas of concern between the power and communications industries.

1. Communications Infrastructure is Increasingly Important for Electric Reliability and Safety.

As providers of electricity to much of America, EEI’s members are major users of communication networks, including wireless systems that operate to support the provision of safe, reliable, and low-cost power to the public and to ensure the safety of life, property and the environment. With the increased proliferation of variable and distributed energy resources (“DERs”) as well as electric vehicles, EEI members must deploy the most modern communications equipment to meet customers’ need for the safe, reliable, secure, efficient delivery of power.

Electric company communications networks consist of wireline and wireless technologies; while wireline services can provide faster and more reliable communications, wireline can be cost prohibitive or impractical in remote locations. To support the reliable delivery of these services on a real-time basis, EEI members therefore deploy a sophisticated range of private wireless networks throughout their service territories for numerous mission-

critical communications needs. These communications networks provide situational awareness, underpin safety functions, and enable crews to repair and restore services after storms.

Electric companies use spectrum in support of these private wireless networks in a variety of ways. For example, electric companies use wireless communications networks to monitor and control substations through supervisory control and data acquisition systems (“SCADA”), distribution automation devices, fault sensors, and two-way meters. Electric companies also use wireless technologies to connect operation centers to service crews.

Due to the criticality of these networks, electric companies cannot accept even the slightest risk that these wireless networks could be degraded, as diminished situational awareness can result in degraded reliability. Microwave systems that are used for mission-critical communications, therefore, must maintain extremely high standards for reliability. Most electric company links are designed for availabilities of 99.999 percent or better; and some even operate at 99.9999 percent reliability.

These stringent requirements for electric company communications systems are necessary because they support the Bulk Electric System (“BES”). These assets are governed by rigorous, mandatory, and enforceable reliability standards adopted by the Federal Energy Regulatory Commission (“FERC” or “Commission”) and the North American Electric Reliability Corporation (“NERC”). Compliance with these asset standards requires electric companies to employ reliable, secure communications systems that are hardened, provide diverse routing, and possess the capacity to handle large amounts of traffic over wide areas with an extremely low level of latency.

Communications technologies also are critical during natural disasters and other situations that result in power outages. Electric companies rely on communications networks for interactions with service crews in the field to support their efforts to maintain or quickly restore electric service. The ability for crews to communicate with the system operators and the local offices is critical during a restoration process. In recent comments to the FCC regarding restoration practices in the wake of Hurricane Michael, American Electric Power Service Corporation and Southern Company Services Inc. both noted that they rely on their own networks for purposes of internal communications during disaster recovery and that those networks use back-up power and redundant backhaul to avoid outages created by the loss of commercial power and damaged fiber.¹ In Alliant Energy's experience in responding to last year's tornado that hit Marshalltown, Iowa, the radios that our crews used during the recovery efforts were invaluable since public networks were overloaded right after the tornado hit. Because we had to bring in crews from various parts of Iowa, we also needed to have the same radio system to efficiently communicate.

In addition to essential voice communication between operational staff and line workers in the field, electric companies use the communication infrastructure to maintain timely data and information on their critical assets. Such data enables electric companies to determine the operational status of substations, transmission, and distribution protective and line sectionalizing devices. Electric companies use this data to do storm damage assessments after major weather events, enabling them to restore power to their customers while getting their crews and mutual

¹ See *In the Matter of Public Safety and Homeland Security Bureau Seeks Comment on Improving Wireless Network Resiliency Through Encouraging Coordination with Power Companies, Comments of American Electric Power Service Corporation and Southern Company Services Inc.*, at 2-6, PS Docket No. 11-60 (filed Feb. 8, 2018).

assistance crews safely home. During these types of events, electric companies work closely with public safety entities and first responders. Under these circumstances, electric companies depend on communications networks that operate at the highest levels of reliability, consistent with communications networks that support first responder communications.

As part of industry's effort to modernize the electric grid, the nation's electric companies have made significant investments in the deployment of smart grid technology.² This technology relies upon communications systems and networks to help expedite real-time system monitoring and controls. This investment, among other benefits, enables electric companies to be extremely responsive in times of emergency. The smart grid technology can provide electric companies with information in real-time and automatically isolate fault locations, allowing electric companies to more efficiently and effectively locate, troubleshoot, isolate, and repair outages. Smart grid technology aids storm response by providing electric companies with increased information and tools that improves damage assessments and facilitate faster reaction and restoration.

Finally, electric companies use communications services and devices to enhance interactions with their customers. The push is towards more real-time interactions with customers, whether for status updates on service requests or insight into their energy consumption to help them make usage decisions. To support these real-time communications to our customers, electric companies will continue to need reliable, high-speed wired and wireless connectivity.

² Smart grid technologies include phasor measurement units, advanced digital meters, relays and automated feeder switches.

2. Electric Company Wireless Communications Requirements Are Increasing to Meet Customers' Energy Goals and Expectations.

With modernization of the electric grid, clean power initiatives and innovative customer solutions technologies, electric companies, like Alliant Energy, face greater needs for communications capabilities. With respect to private wireless networks, this means EEI members face the need for more access to interference-free licensed spectrum.³

Electric companies are investing in smart grid infrastructure not only to assure the safety, reliability, and security of the grid, but also to enhance their ability to provide new services to customers. For example, the public's adoption of electric end-use technologies or "electrification" has grown significantly since the 1950s and is projected to continue to grow into the future, particularly as policies look to use electrification to help decarbonize the transportation and manufacturing sectors.⁴ The constant evolution of advanced grid infrastructure coupled with the efficient electrification of the economy means that electric companies' need for additional spectrum has and will continue to grow. Access to adequate bandwidth is important to the deployment of electric vehicles and DERs, such as microgrids, energy storage, energy management, and renewables, including wind and solar. Given the distributed nature of DERs, some of which will be located outside of traditional electric company networks, many DERs interface with the grid primarily through wireless connections. Given customer interests in reliability, security, and resiliency of electric company infrastructure,

³ The key distinction between using licensed spectrum and using unlicensed spectrum is that licensed spectrum users are entitled to protection from interference from other users. Licensed spectrum is generally more suitable for electric company communications that require low latency and high reliability.

⁴ See e.g., Electric Power Research Institute, U.S. National Electrification Assessment, (2018), <http://mydocs.epri.com/docs/PublicMeetingMaterials/ee/000000003002013582.pdf>.

bandwidth is also critical for enhanced voice and video monitoring of important assets and the functioning of smart grid intelligent devices, such as distribution synchophasors.

Many localities are also building “Smart Communities” that use high bandwidth for different types of electronic data collection sensors to supply information, which is then used to manage assets and resources efficiently.⁵ Accordingly, as the number of devices deployed outside of existing core networks increases, demand for bandwidth – and competition for bandwidth – will grow. Despite this, the nation still lacks a clear plan to ensure that electric companies have the reliable and sufficient access to spectrum they need to power America’s future.

3. Increasing Demand for Spectrum Raises Serious Concerns for Electric Industry Operations and the Commissions Should Coordinate with the FCC.

The FCC observes that “devices that employ Wi-Fi and other unlicensed standards have become indispensable for providing low-cost connectivity in countless products used by American consumers.”⁶ The available licensed spectrum is becoming scarce for carriers and companies; at the same time, there is a push to increase spectrum by opening bands to unlicensed use. The FCC is currently considering in a rulemaking whether to open access to licensed spectrum in the 6 GHz band and how to protect incumbent licensees, such as electric companies, that operate in that band.⁷

⁵ See e.g., Virginia Smart Communities Working Group, Report and Recommendations, at 48 (Mar. 2018), http://www.cit.org/assets/1/7/VASC_Report2_FINAL.pdf

⁶ See *In the Matter of Unlicensed Use of the 6 GHz Band, Expanding Flexible Use in the Mid-Band Spectrum Between 3.7 and 24 GHz*, Notice of Proposed Rulemaking, ET Docket No. 18-295 and GN Docket No. 17-183 (Released October 24, 2018).

⁷ *Id.*

The FCC's proposal to open up the 6 GHz band raises serious concerns for the electric industry as it uses that band to support mission-critical operations. Many EEI members hold licenses in the 6 GHz band for their microwave communications, which offers our members the reliability and protection from interference that these networks require. Electric companies use the 6 GHz band for SCADA and tele-protection systems that monitor and control the balance of power on the grid, which must operate constantly in real-time with sub-second latency to avoid system instability and power disruptions. Moreover, electric companies use the 6 GHz band as the backbone for their communications networks, providing high-capacity data and voice across both urban and rural service territories.

Alliant Energy's Iowa generation and dispatch operations, for example, use the 6GHz band in support of bids into the MISO markets. Interference with those systems could negatively affect other areas in the MISO footprint. This is because MISO's data specification requires Alliant Energy and other market participants to send to MISO the real-time data from the generators every two seconds. Unstable communications would hinder the ability to meet that requirement. Moreover, interference with those networks could also harm the company's ability to monitor or control the generators or calculate an accurate system load, which could, in turn, result in lost opportunity in the MISO market and create unnecessary costs for customers.

Electric companies lack clear and immediate alternatives to using the 6 GHz band. Electric companies cannot, for example, simply migrate their operations to other spectrum bands. Such a migration would require significant reengineering of their microwave links or adding more link segments to make up for shorter propagation distances. As a practical matter, it may not be possible to construct additional sites for microwave links in these other spectrum bands, owing to the difficulty associated with local zoning and permitting, as well as environmental

requirements. Finally, commercial communications networks are often unavailable or unreliable, preventing electric companies from relying fully on them as an alternative to their private communications networks in the 6 GHz band.

There is other spectrum that currently is used for mobile services that could be made available for unlicensed operations. The interest in Wi-Fi and mobile services cannot outweigh the critical importance of maintaining safe, reliable, and affordable electric service, particularly when there are alternative bands that could be used for Wi-Fi and mobile services that would not threaten electric system reliability.

Given the growing interdependencies between the electric and communications industries, EEI joins with UTC to recommend that the Commission coordinate and formally engage with the FCC and other stakeholders in regular meetings.⁸ Such engagement would allow the Commission, as the agency with responsibility for the reliability of the BES, to more fully understand and amplify concerns regarding the impact of communications policy decisions on the electric industry. Specifically, given the importance of the data and transmission carried on 6 GHz communications networks and the risk presented by an adverse FCC decision on the 6 MHz band, the Commission should monitor the FCC's 6 GHz rulemaking for purposes of ensuring grid reliability and to consider whether to formally comment in that proceeding. This type of engagement would be consistent with the FCC's recent recommendation to increase

⁸ See *In the Matter of Technical Conference Regarding Security Investments for Energy Infrastructure*, Comments of the Utilities Technology Council, Docket No. AD19-12-000 (filed May 24, 2018).

coordination with the Commission to identify ways for Federal regulators to harmonize restoration practices across sectors.⁹

In conclusion, I appreciate the opportunity to participate in this technical conference as it provides a needed forum to discuss the role of communications technology and policy in maintaining electric system reliability. The Commission, NERC and the industry all have a shared commitment to reliability of electric system. Given the increasing interdependencies between the electric and communications industries, the Commission is to be commended for taking time to engage on this issue during the technical conference. EEI encourages the Commission to engage with the FCC and other stakeholders on policies that promote public safety and security as well as ensuring that new and innovative technologies are readily accessible to the American people.

⁹ See *In the Matter of Public Safety and Homeland Security Bureau Seeks Comment on Hurricane Michael Preparation and Response*, October 2018 Hurricane Michael's Impact on Communications: Preparation, Effect, and Recovery, A Report of the Public Safety and Homeland Security Bureau, PS Docket No. 18-339 (May 2019).
<https://docs.fcc.gov/public/attachments/DOC-357387A1.pdf>