Before the
National Telecommunications and Information Administration
Department of Commerce
Washington, DC 20230

In the Matter of Developing a Sustainable Spectrum Strategy for America's Future	)))))	Docket No. 181130999–8999–01

Attn: John Alden, Office of Spectrum Management:

COMMENTS OF
THE EDISON ELECTRIC INSTITUTE AND THE UTILITIES TECHNOLOGY COUNCIL

The Edison Electric Institute ("EEI") and the Utilities Technology Council ("UTC") hereby respond to the Request for Comments by the National Telecommunications and Information Administration (NTIA) in the above-referenced proceeding.[1] EEI and UTC applaud the NTIA for its leadership in carrying out the goals of the National Spectrum Strategy.[2] EEI and UTC support the goals of the National Spectrum Strategy to increase spectrum access for all users; create flexible models for spectrum management; use ongoing research and development, testing and evaluation (RDT&E); build a secure, automated capability to facilitate assessments of spectrum use among Federal and non-Federal spectrum stakeholders; and improve the global competitiveness of United States terrestrial and space-related industries as well as augment the mission-critical capabilities of Federal entities through spectrum policies, domestic regulations and leadership in international forums.

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[1] *Developing a Sustainable Spectrum Strategy for America's Future*, National Telecommunications and Information Administration, Docket No. 181130999–8999–01, 83 Fed. Reg. 65640 (hereinafter, "Request for Comment").

[2] Memorandum for the Heads of Executive Departments and Agencies, Developing a Sustainable Spectrum Strategy for America's Future, 83 FR 54513 (Oct. 30, 2018), *available at* https://www.govinfo.gov/content/pkg/FR-2018-10-30/pdf/2018-23839.pdf (hereinafter, "National Spectrum Strategy").

EEI and UTC and their utility members are pursuing the development of next-generation applications that will improve the reliability, safety and security of grid operations. This drive to advanced automation will require access to interference-free spectrum to support the increasing communications requirements to support the proliferation of millions of smart grid devices across electric company transmission and distribution networks. Access to interference-free spectrum for modernization of the energy grid is consistent with the National Spectrum Strategy because it will support applications and services to electricity grids and other critical elements in America's infrastructure.

EEI and UTC respectfully request that the National Spectrum Strategy address the urgent need among critical infrastructure industries – including electric companies and other critical infrastructure industries – for access to licensed, interference-free radio spectrum for private wireless networks. For decades, electric companies have operated private wireless networks to support their operations. These networks are designed, built and maintained to high standards of reliability because they support mission-critical communications that ensure operational integrity and the safety of life, health and property. Moreover, these networks must remain operational during emergencies such as severe storms, when commercial networks can become overwhelmed due to congestion or completely fail due to damage. That is why it is important that the National Spectrum Strategy address the spectrum needs of electric companies and other critical infrastructure, because the private wireless networks they use must maintain network reliability.

Due to the advent of advanced smart grid technologies, access to additional spectrum is needed to support increasing capacity and coverage requirements. There is explosive growth in the number of IIoT devices that are being deployed by electric companies and other critical-infrastructure industries. Devices are being deployed more pervasively within existing networks

to enable new applications and provide additional capacity. Additionally, these devices are also being deployed further outside of existing networks to expand coverage. At the same time the number of devices is increasing, the bandwidth of the applications is also increasing because of the need for real-time HD video, imaging, audio, and other bandwidth-intensive sensing, monitoring, and inspection content. Legacy narrowband systems cannot reliably support the increasing amount of data that must be carried over private wireless networks for two-way, real-time connectivity to these devices, which may be deployed over large geographic areas. Hence, there is a critical need for spectrum to support the increasing communications needs for these new applications by electric companies and other critical infrastructure industries, as NTIA itself has reported.[3]

In its request for comment, NTIA asks in what ways the predictability of spectrum access for all users could be improved.[4] On a related note, NTIA also asks to what extent automation could be introduced to facilitate assessments of spectrum use and expedite the coordination of shared access, especially among Federal and non-Federal spectrum stakeholders.[5] NTIA also asks how standards, incentives, and enforcement mechanisms could promote efficient and effective spectrum use.[6] Additionally, NTIA asks for comment on RDT&E to promote spectrum access, and the risks to global competitiveness from spectrum policy. Finally, NTIA asks for comment on the spectrum requirements of industries in the next 15 years and how those needs

[3] *See e.g.* Marshall W. Ross and Jeng F. Mao, Current and Future Spectrum Use by the Energy, Water, and Railroad Industries, Response to Title II of the Departments of Commerce, Justice, and State, Judiciary, and Related Agencies Appropriations Act, 2001 Public Law 106-553, U.S. Dept. of Commerce, NTIA (Jan. 2002).

[4] Request for Comment, 83 Fed. Reg. at 65641.

[5] *Id.*

[6] *Id.*

can be accommodated while ensuring the mission requirements and operations of Federal authorities.[7]

In response, EEI and UTC emphasize that the spectrum needs of all users must be considered, particularly those of critical infrastructure industries. There are several reasons why the public interest would be served by providing critical infrastructure industries with fair opportunities to access to interference-free spectrum to meet their high standards for communications reliability and increasing capacity and coverage requirements. First and foremost, it is in the national security and economic interest for critical infrastructure industries to have access to spectrum, as the country depends on the essential energy, water and transportation services that are provided by critical infrastructure industries. Furthermore, spectrum is becoming increasingly necessary for these industries to carry out their missions effectively.

Electric companies use wireless networks to coordinate with first responders in the aftermath of hurricanes and other disasters to restore power and water services. They also are increasingly dependent on wireless networks for day-to-day operations to monitor and control systems by communicating data from devices, such as reclosers, switches and valves that must quickly isolate faults automatically before they cause a widespread outage or worse. The operational efficiencies gained from modernizing the energy grid saves enormous amounts of energy and water, and provides even greater benefits in terms of safety and reliability, which also results in downstream economic and societal benefits in terms of increased productivity,

[7] *Id.*

environmental quality, public health and homeland security. These public interest benefits underscore the need for access to spectrum by critical infrastructure industries.

These communications needs cannot be met effectively by commercial service providers, which is why many critical-infrastructure industries including electric utilities operate their own private wireless networks. As noted earlier, commercial networks are subject to congestion during emergencies when a single cell site is flooded with calls in the affected area. Likewise, commercial sites may lack adequate back up power to maintain operation during extended natural disasters. Finally, commercial sites may lack adequate network redundancy and/or sufficient latency to meet reliability requirements in the event of a fiber cut or other network problems, such as jitter or packet loss. By comparison, critical-infrastructure communications networks have much greater reliability (*i.e.*, 99.999 percent or higher), longer back-up power (72 hours minimum at each site), better network redundancy and diverse routing (*e.g.*, SONET), and are not subject to the same degree of congestion and security concerns associated with sharing commercial communications networks with the public.

With the advent of a multitude of new smart grid applications, the need for additional spectrum for electric companies is essential. As noted above, there is explosive growth expected in the IIoT market, and critical infrastructure industries are leading that growth, whether it is smart grid, or aerial drones, terrestrial crawlers, submersibles, robots, and other remote inspection equipment for automated operations. Over the course of the next 15 years, critical infrastructure communications networks will need to be able to carry terabytes of data for two-way, real-time communications over large geographic areas with very low latency and very high reliability. Any failure in these communications systems could have significant adverse

consequences, owing to the essential nature of the services they support and the hazardous environments in which personnel in these industries work.

To support these increasing communications needs, critical-infrastructure industries need fair opportunities to access licensed, interference-free spectrum that is allocated in sufficient channel bandwidths and sufficiently lower frequency range to support wide area coverage and higher throughput/lower latency. Unlicensed spectrum is subject to interference and congestion which can threaten the reliability of communications. It also is limited in range because of power restrictions. By comparison, licensed spectrum permits higher power and presumably better coverage, particularly in lower frequency ranges that tend to propagate better. Consequently, critical-infrastructure industries need access to wideband if not broadband *licensed* spectrum in lower frequency ranges.

EEI and UTC look forward to working with NTIA to develop opportunities for critical-infrastructure industries to access spectrum. In that regard, EEI and UTC are open to the opportunity to access spectrum on a shared basis and to explore RDT&E to promote spectrum access. EEI and UTC believe that the National Spectrum Strategy is critical to America's global competitiveness. Other countries around the world are providing utilities and other critical-infrastructure industries with access to spectrum that would enable higher bandwidth applications using standardized equipment.[8] Why not the United States? Not only is it important in terms of global competitiveness, it is also important in terms of national security, particularly as policymakers are developing new regulatory requirements related to infrastructure protection through cyber and physical security standards. The National Spectrum Strategy needs to give

[8] "Consultation on Proposed Release of the 410-415.5 / 420-425.5 MHz sub-band," ComReg 17/67 (Jul. 31, 2017), *available at* https://www.comreg.ie/media/dlm_uploads/2017/07/ComReg-1767.pdf (setting out ComReg's preliminary views on the potential uses of the bands, including "Smart Metering and Smart Grids").

critical infrastructure industries the tools they need to maintain security, as well as compete in the global marketplace.

In conclusion, EEI and UTC appreciate the opportunity to file these comments in response to NTIA's Request for Comment related to the National Spectrum Strategy. EEI and UTC look forward to working with NTIA as it further develops the National Spectrum Strategy. Please direct any questions or comments to the undersigned.

Respectfully,

Edison Electric Institute

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