

January 2, 2024

VIA ELECTRONIC MAIL

National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW
Washington, DC 20230
Attn: John Alden, Office of Spectrum Management

Re: Implementation of the National Spectrum Strategy; Notice of Opportunity for Public Input

Southern Company Services, Inc., on behalf of itself and its affiliates, greatly appreciates the leadership and efforts of the National Telecommunications and Information Administration (“NTIA”) in producing the National Spectrum Strategy (“Strategy”) and is pleased to provide these comments in response to NTIA’s request for public input on implementing the Strategy.¹

The Presidential Memorandum on modernizing U.S. spectrum policy states that the Administration’s goal is to accelerate U.S. leadership and unlock innovation “while ensuring necessary access to spectrum for agencies and private-sector users, such as for scientific, public safety, critical infrastructure, and national security uses, now and into the future.”² Southern Company Services, Inc. accordingly urges NTIA to ensure that its implementation plan recognizes and incorporates the spectrum and communications needs of utilities and other operators of the Nation’s critical infrastructure.

Southern Company (“Southern”) is a leading energy provider with a mission of providing clean, safe, reliable, and affordable energy with excellent service. Through its subsidiaries, Southern operates regulated electric and natural gas utilities serving more than 9 million residential, commercial, and governmental customers in nine states. Southern’s three wholly owned electric utility subsidiaries, Alabama Power Company, Georgia Power Company, and Mississippi Power Company, provide retail and wholesale electric service throughout Georgia, the southern two-thirds of Alabama, and southeastern Mississippi. Southern supplies wholesale electric power to municipalities, rural electric cooperatives, and other distribution providers through its Southern Power subsidiary, which operates natural gas, solar, wind, and biomass generating facilities in multiple states. Southern Company Gas operates regulated local distribution companies in four states and holds investments in five natural gas pipelines. Southern Company Services, Inc. is a wholly owned subsidiary service company of Southern. Southern’s wholly owned subsidiary Southern Communications Services, Inc. d/b/a Southern Linc operates an extensive wireless network that provides communications services to Southern’s electric utilities and other public utilities in the region, as well as to state and local public safety agencies, emergency responders, school districts, rural local governments, and other commercial entities throughout the Southeast.

¹ See *Implementation of the National Spectrum Strategy*, Notice of Opportunity for Public Comment, 88 Fed. Reg. 85266 (rel. Dec. 7, 2023).

² Presidential Memorandum of November 13, 2023, *Modernizing United States Spectrum Policy and Establishing a National Spectrum Strategy*, 88 Fed. Reg. 80079 (rel. Nov. 17, 2023) (“Presidential Memorandum”).

Access to Spectrum is Vital to the Nation's Critical Infrastructure

The Nation's critical electric, gas, and water utility infrastructure, which delivers essential services to the public, is increasingly reliant on advanced communications systems and technologies that allow for enhanced monitoring and control. The future, reliable "green" grid in fact requires the development and deployment of advanced utility communications systems and technologies to support vital National interests: improving the resiliency, reliability, and security of the Nation's electric grid is essential to our country's economic, industrial, and technological development, essential to society, and essential to national security.³ These communications also are crucial to greater energy efficiency and energy independence by enabling the emergence of distributed generation, greater penetration of renewable resources, and other efficiency efforts.

Southern, like other operators of critical infrastructure, uses a variety of communications technologies and services to support the safe and efficient generation, transmission, and distribution of energy services to the public. In particular, Southern and other electric utilities rely on mission-critical wireless communications to support utility applications necessary to the safe and reliable delivery of electricity to homes and businesses nationwide, including:⁴

- Real-time monitoring of high and medium voltage transmission lines;
- Supervisory Control and Data Acquisition ("SCADA") systems – a critical situational awareness tool for operating electric grids and other critical infrastructure;
- Teleprotection to selectively isolate faults on transmission lines, transformers, reactors, and other vital items of electrical plants;
- Load management to enable energy produced through distributed generation and renewable resources to be delivered to the public through the electric grid;
- Outage management through remote monitoring of system components for repair or replacement before failure;
- Voice and data communications between energy control centers, substations, power generating stations, and the other utilities with which Southern must coordinate in real-time for management of the interconnected power grid;
- Real-time monitoring for physical and electronic intrusions into grid infrastructure and systems; and
- Critical voice and data communications, including mobile radio systems used by field crews to coordinate the safe and efficient construction, maintenance, and restoration

³ Among other things, utilities provide essential services to vital defense and other government facilities and directly support Federal government operations and missions across the country. The importance of utility infrastructure to the national economy and national security is also reflected in the FAST Act of 2015, which charges the Department of Energy with oversight of critical electric infrastructure security. See Fixing America's Surface Transportation Act, Public Law 114-94, 2015, Sections 61001 *et seq.* ("FAST Act").

⁴ Many of these applications require very low latency – as low as 20 milliseconds or better – and very high reliability with availability of 99.999% or greater (*i.e.*, no more than 5.25 minutes of downtime per year).

of electric facilities, for everyday use and for emergency service restoration and storm response operations.

To fulfill these and other critical communications needs, utilities require access to spectrum that will allow them to directly operate communications networks in a way that meets the levels of reliability and resiliency necessary to support the clean, safe, efficient, and reliable delivery of essential electric services to the public. Commercial service providers generally cannot meet the levels of coverage, reliability, and security required by utilities, and the growing prevalence of “smart grid” and other advanced devices and technologies across the grid, combined with the constant risk of cyberattacks, has further heightened the imperative for electric utilities to directly control and operate the communications networks that underpin these vital grid support operations, rather than outsourcing this increasingly sensitive and vital function to third parties. Currently, however, utilities have very few options for accessing spectrum, and those limited options are increasingly insufficient in bandwidth.

Ensuring that utilities and other operators of critical infrastructure have access to sufficient spectrum is essential to maintaining and accelerating U.S. leadership in economic, technological, and clean energy productivity and innovation. Canada, multiple European nations, and countries across North Africa and the Middle East are further along than the U.S. in recognizing the importance of spectrum for utilities and have all taken steps towards making spectrum available for critical infrastructure communications. While more work remains to be done globally around spectrum availability for utilities, the U.S. should not continue to lag behind the efforts accomplished thus far.

Recommendations for Implementing the National Spectrum Strategy

Much of the discussion around the National Spectrum Strategy has been focused on federal use of spectrum, commercial use of spectrum, and shared use of spectrum between these two sectors. As recognized, however, in the Presidential Memorandum, there needs to be a place in the discussion for access to spectrum for utilities and other operators of the Nation’s critical infrastructure.⁵

A. Developing a Spectrum Pipeline

The first Strategic Objective under Pillar One of the Strategy is to “[e]nsure sufficient spectrum access to support Federal agency missions now and into the future.”⁶ The Presidential Memorandum provides guidance on this issue through a list of “essential Federal missions” that the Strategy must fully account for, including “securing the Nation’s critical infrastructure.”⁷ The second Strategic Objective under Pillar One of the Strategy is to “[e]nsure spectrum resources are available to support private sector innovation now and into the future.”⁸ Utilities play a key role in fulfilling the essential Federal mission of securing critical infrastructure, yet the vast majority of utilities are private sector entities with infrastructure and operations developed through and reliant on private sector innovation. Thus, any consideration of how best to achieve these two objectives must account for and incorporate the spectrum and communications needs of utilities and other operators of the Nation’s critical infrastructure.

⁵ See Presidential Memorandum, Sec. 1, 88 Fed. Reg. at 80079.

⁶ National Spectrum Strategy at 3-4 (Strategic Objective 1.1).

⁷ Presidential Memorandum, Sec. 3(b), 88 Fed. Reg. at 80080.

⁸ National Spectrum Strategy at 4-7 (Strategic Objective 1.2).

First, NTIA should consider the need to make licensed spectrum directly available to utilities to support the Nation's critical infrastructure. Making spectrum directly available will allow utilities and other critical infrastructure entities to wholly control the communications networks that support their operations and to more effectively manage and ensure greater reliability, resiliency, safety, and efficiency. Moreover, operating and controlling their own communications networks enables utilities to implement and maintain cybersecurity requirements to protect their electric generation, transmission, and distribution systems from attacks and intrusions.

Next, spectrum should be available and accessible for utilities in the low, medium, and high portions of the spectrum band and should be aligned with the commercial market. The Strategy currently focuses on near-term study of five spectrum bands in the mid-band or higher, including the 7125-8400 MHz band, which is discussed in more detail below in these comments.⁹ However, NTIA and other public and private sector stakeholders must continue to look for and study options and opportunities below 3 GHz, ideally below 1 GHz.¹⁰ Regardless of whether it is in the low, middle, or high bands, alignment of utility spectrum with the commercial market is important, as this will enable and promote harmonized standards, harmonized technologies, and a harmonized equipment market for both commercial and utility/critical infrastructure systems and applications. Such harmonization will advance innovation and create economies of scale that will promote U.S. equipment manufacturers and bring needed equipment and applications to the market – and to the electric grid and other critical infrastructure – more rapidly and in a more cost-efficient and cost-effective manner.

Third, utilities must be able to acquire spectrum on terms that take into consideration their role as providers of essential public services and that can be incorporated into their regulated business models. Any capital investment by utilities ultimately is borne by the utilities' customers through the rates charged and the amounts billed each month. This model does not lend itself to the high stakes, highest bidder auction approach that the U.S. has relied upon to allocate spectrum for licensed exclusive use. The auction approach is similarly ill-suited for making sufficient spectrum resources available to Federal agencies and their supporting entities. In furtherance of the Strategy's first two strategic objectives, NTIA should therefore explore alternative approaches to making spectrum available to both Federal agencies and to critical infrastructure entities, such as public-private partnerships or other arrangements that would allow for shared use or coexistence while providing an "exclusive license" level of protection and certainty to both government and critical infrastructure communications operations.

Finally, utilities must be able to operate their communications systems free from harmful interference. In other words, utilities' communications systems must not be subject to interference that degrades the performance and reliability requirements of their grid support systems, which are designed and expected to perform at a level of 99.999% reliability. While there may be bands and services for which interference is an inconvenience, interference with electric grid control devices and other critical infrastructure communications is a significant disruption that can have serious and costly consequences.

⁹ *Id.* at 6-7; *See infra.* at 8.

¹⁰ One such opportunity can be found in the current allocations between 380-470 MHz. Spectrum in this band is currently being used by utilities in Europe and elsewhere around the world for private LTE ("pLTE") systems that support critical infrastructure operations, and this spectrum has an existing ecosystem that can be leveraged by utilities in the U.S. as well as by Federal users. Southern therefore urges the near-term study of the 400 MHz band for potential shared use with utility and other critical infrastructure operations.

B. Collaborative Long-Term Planning

The Presidential Memorandum on modernizing U.S. spectrum policy establishes a new Interagency Spectrum Advisory Council (“Council”) “to serve as the principal interagency forum for heads of agencies to advise NTIA on spectrum policy matters and to ensure that all decisions made by NTIA take into consideration the diverse missions of the Federal Government.”¹¹ In order to satisfy the directives of the Presidential Memorandum, as well as achieve the goals of Strategic Objective 2.1 of the National Spectrum Strategy, the Council must include the Department of Energy and the Federal Energy Regulatory Commission (“FERC”) as essential government stakeholders in spectrum planning and decision-making.

As noted above, one of the “essential Federal missions” that the Strategy must fully account for is “securing the Nation’s critical infrastructure.”¹² The Department of Energy is the Sector Risk Management Agency for the Energy Sector and is specifically charged under the FAST Act with oversight of critical electric infrastructure security.¹³ The ability of the Department of Energy to meet its statutory mandate to address and oversee critical electric infrastructure security will depend on the use of spectrum-based communications – such as the applications described above in these comments – to monitor, control, and protect the operation of the Nation’s electric grid. The Federal Energy Regulatory Commission has oversight over the North American Electric Reliability Corporation (“NERC”), whose mission is to reduce risks to the reliability and security of the North American electric grid through the adoption of reliability standards, including Critical Infrastructure Protection (“CIP”) requirements that U.S. electric utilities must comply with.

Inter-agency discussions among NTIA, the Department of Energy, FERC, and other agencies need to happen early in the spectrum planning process – and must continue on a regular basis throughout the process – so that all government stakeholders can effectively provide necessary input on spectrum policy decisions. Despite the impact of spectrum access and spectrum policy on the ability of Federal agencies to carry out their missions, spectrum issues are often not among many agencies’ priorities and risk being overlooked. NTIA should therefore also take a proactive role in engaging with other Federal agencies regarding their current and future spectrum needs and determining how these needs can best be addressed and protected.

The National Spectrum Strategy correctly identifies the need to develop a process for bringing together all stakeholders – both government and private sector – for advance planning and discussion of spectrum issues and policies, and it further states that the U.S. Government will leverage existing advisory groups and identify new groups to develop a new collaborative framework.¹⁴ As it works to identify potential new advisory groups, NTIA should proactively seek engagement with and participation from the private sector, and should further ensure that the interests of all stakeholders, including utilities and critical infrastructure entities, are actively represented and included in the process. To help meet the goals of Strategic Objective 2.1, Southern recommends the inclusion of the Electric Power Research Institute (“EPRI”) and similar industry groups with expertise and experience in the specific communications needs of utilities and other operators of the Nation’s critical infrastructure.

¹¹ Presidential Memorandum, Sec. 2, 88 Fed. Reg. at 80080.

¹² *Id.*, Sec. 3(b), 88 Fed. Reg. at 80080.

¹³ See note 3, *supra*.

¹⁴ National Spectrum Policy at 10.

As NTIA considers the development of a national spectrum decision-making strategy under Strategic Objective 2.2 of the National Spectrum Strategy, Southern supports NTIA's recognition of the need to account for the societal value of spectrum, including both the direct and indirect benefits of different uses of spectrum, such as the use of spectrum for the provision of essential services.¹⁵ As stated in a report on spectrum policy prepared by the Congressional Research Service ("CRS"):

Wireless networks are an important component of smart grid communications ... Spectrum resources are also needed for railroad safety, for water conservation, for the safe maintenance of critical infrastructure industries, and for many other applications that may not have an immediate commercial value but can provide long-lasting value to society as a whole.¹⁶

Southern also cautions against an over-reliance on efforts to quantify the societal value of different uses of spectrum and urges consideration of the qualitative benefits as well. For example, nearly every aspect of the U.S. economy and nearly every aspect of our modern society – public safety, health care, food production, education, and so forth – depends on the security and reliability of our Nation's critical infrastructure, and the direct and indirect benefits provided by this infrastructure are nearly impossible to quantify. Taking into account the qualitative as well as quantitative value to society of different uses of spectrum will enable the development of both near-term and long-term spectrum policy decisions that go beyond a single sector to address a broad range of national priorities.

C. Spectrum Management Must be Based on Transparent, Reviewable Studies and Data

Southern strongly agrees with and supports the requirement that decision-making on spectrum issues and spectrum policy be founded on systematic and rigorous analysis of all relevant data.¹⁷ Furthermore, as emphasized in the National Spectrum Strategy, the spectrum management principles and methods applied must be based on and incorporate transparent, reviewable studies and data, in addition to sound engineering and science.¹⁸ Experience with the way in which important spectrum-related decisions have been made over the years underscores the crucial importance of transparency in these matters, as well as the need to make transparency an actual commitment rather than a hollow promise in a policy statement to be downplayed or dismissed.

By way of comparison, in April 2023 the Federal Communications Commission ("FCC") adopted a Policy Statement on how the FCC intends to manage spectrum going forward. The FCC's Policy Statement set forth several principles, including the principle that "[q]uantitative analyses of interactions between services that are fact- and evidence-based, sufficiently robust, transparent, and

¹⁵ See *id.* at 11-12 (Strategic Objective 2.2).

¹⁶ Linda K. Moore, *Spectrum Policy in the Age of Broadband: Issues for Congress*, CRS Report for Congress R40674 at 11 (2013) (available at <https://crsreports.congress.gov/product/pdf/R/R40674>).

¹⁷ See National Spectrum Strategy at 11-12 (Strategic Objective 2.2).

¹⁸ *Id.* The Strategy notes that the extent of transparency may be "subject to national security and competition constraints." *Id.* at 9. Southern agrees with the need to ensure that sensitive national security information is appropriately protected. With respect to information that may be commercially or competitively sensitive, NTIA should provide appropriate confidentiality protections to encourage and enable parties to share such information, recognizing that many stakeholders – such as utilities and critical infrastructure entities – do not compete in providing communications services.

reproducible are needed to better inform spectrum management decision-making.”¹⁹ According to the FCC’s Policy Statement, “[t]ransparent and reproducible quantitative analyses best inform the Commission’s decision-making ... giv[ing] stakeholders and the Commission the ability to validate the fidelity of interference models and ensure that they represent realistic operating conditions and scenarios, with balanced protection criteria.”²⁰ Just six months later, the FCC adopted an order authorizing expanded unlicensed use of the 6 GHz band, despite ample evidence in the record that such use would result in harmful interference to incumbent 6 GHz systems, including those used to provide mission-critical support to public safety and critical infrastructure operations.²¹ In so doing, the FCC continued to rely only on simulation results and assumptions that were submitted by unlicensed advocates without requiring disclosure of the underlying simulation codes and raw data that are required to allow the FCC and affected stakeholders the opportunity to fully understand and reproduce how such unlicensed operations were being modeled against incumbent operations.²²

Although the FCC’s 6 GHz Second Report and Order acknowledged the transparency principle articulated in its Policy Statement, the FCC stated that it did not need to require the simulation code and resulting raw data to be disclosed – even to the FCC – because, in its view, enough information had been provided to enable “knowledgeable engineers” to conduct identical simulations and obtain consistent results, despite overwhelming record evidence to the contrary.²³ The FCC also expressly rejected the suggestion that it should follow the practices of NTIA by requiring parties to provide the source code for their simulations, as NTIA did when it released the interference analysis software for evaluation of 3.1 GHz network deployments as open-source code.²⁴

As the example above demonstrates, NTIA’s implementation plan must be more than a policy statement and must include a true commitment to transparency not only with respect to Strategic Objective 2.2, but throughout the entirety of the National Spectrum Strategy. Southern therefore urges NTIA to ensure that its application of the principle of transparency represents a full commitment to that principle, consistent with the approach it took during its review of network deployments in the 3.1 GHz band.

D. Spectrum Innovation, Access, and Management

Pillar Three of the National Spectrum Strategy focuses on spectrum innovation, access, and management through technology development.²⁵ In Strategic Objective 3.1, the Strategy places particular emphasis on how to promote opportunities for spectrum sharing among public and private sector stakeholders. One of the factors that NTIA should implement as part of its exploration and development of new spectrum sharing opportunities is the commonality of the proposed users, both

¹⁹ *Principles for Promoting Efficient Use of Spectrum and Opportunities for New Services; Promoting Efficient Use of Spectrum through Improved Receiver Interference Immunity Performance*, ET Docket Nos. 23-122, 22-137, Policy Statement, FCC 23-27 (rel. April 21, 2023) ¶¶ 5 and 41.

²⁰ *Id.* ¶ 42.

²¹ *Unlicensed Use of the 6 GHz Band, Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, ET Docket No. 18-295, GN Docket No. 17-183, Second Report and Order, Second Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order on Remand, FCC 23-86 (rel. Nov. 1, 2023).

²² *See, e.g., Id.* ¶¶ 50-52.

²³ *Id.* ¶ 52. Notably, in taking this position the FCC made no effort to reproduce or otherwise validate the simulations based on the information presented, stating that it has no statutory obligation to do so. *Id.*

²⁴ *Id.* ¶ 51 and note 249.

²⁵ National Spectrum Strategy at 13-18.

in their missions and in their purpose for using that spectrum – e.g., who will be using the spectrum and how will they be using it.

For example, one of the bands identified under Strategic Objective 1.2 for in-depth study in the near term is the 7125-8400 MHz band.²⁶ The Strategy notes, however, that there is “a variety of mission-critical Federal operations in this band ... that will make it challenging to repurpose portions of the band while protecting incumbent users from harmful interference.”²⁷ NTIA’s analysis of other potential uses for the 7125-8400 MHz band should include consideration of opening this band to shared use by utilities and other critical infrastructure entities, whose missions and use of the band have much in common with those of incumbent Federal users and whose operations provide essential support to Federal government operations and the fulfillment of essential Federal missions. Due to these commonalities, utilities and critical infrastructure entities not only understand how to share Federal spectrum without causing interference and without requiring reallocation or relocation of Federal operations, but they would also be able to effectively enhance Federal use of the band through their support of Federal operations.

The key to promoting spectrum innovation and enabling greater spectrum access for all stakeholders is coordinated research, development, and testing as described in Strategic Objective 3.2 of the Strategy.²⁸ As reflected in the Strategy, real-world testing is essential to the development and deployment of new technologies and spectrum management techniques such as dynamic sharing.²⁹ Computer models and simulations can be effective analytical tools, provided they are transparent, are based on complete and accurate data, and provide consistent and reproducible results. However, the quality and accuracy of the results produced by any simulation depend entirely on the quality and accuracy of the underlying formulas and data they are based on, much of which are assumptions based on “typical” scenarios. Significantly, simulations do not – and cannot – fully or accurately predict or account for many of the variables affecting spectrum performance that exist under real-world operating conditions.

Southern is encouraged by and supports the Strategy’s commitment to the development of a National Spectrum Research and Development Plan.³⁰ As discussed above, this plan should include a requirement for collaborative and transparent real-world testing of new spectrum technologies and management techniques. In addition, the Strategy states that this plan “will consider recommendations developed through the collaborative framework outlined in Pillar Two” with the goal of increasing coordinated research and development among the public and private sectors.³¹ In developing this plan, NTIA should take care to not limit the scope of recommendations to be considered to those coming from the “Pillar Two groups,” which risks creating a systemic feedback loop, but rather should proactively seek input and participation from other elements of the public and private sectors to ensure that the plan considers and incorporates the needs and interests of all stakeholders, including utilities and critical infrastructure entities.

Southern is similarly encouraged by and supports the Strategy’s commitment to the establishment of a national testbed for dynamic spectrum sharing and to encourage real-world

²⁶ See *id.* at 6.

²⁷ *Id.*

²⁸ *Id.* at 15-18 (Strategic Objective 3.2).

²⁹ See, e.g., *id.* at 15 (“Real-world testing of dynamic sharing principles and the evolving technologies supporting them will provide a baseline for wide deployment ...”).

³⁰ *Id.*

³¹ *Id.*

measurements through field testing whenever possible.”³² The national testbed and the testing processes employed should consider and incorporate the spectrum needs and use cases of utilities and critical infrastructure along with those of Federal government and commercial users. The establishment and operation of the national testbed should also leverage the existing testing capabilities, expertise, and experience of other Federal agencies such as those of the Department of Energy’s Idaho National Laboratory, which already has extensive experience conducting studies involving spectrum and energy infrastructure.

The national testbed should also operate under the same transparency principles discussed above and should enable participation by all potentially interested and/or affected stakeholders, including incumbents as well as potential new users. As NTIA is well aware, the development and testing of new spectrum technologies and management techniques requires significant technical, engineering, and financial resources, and many affected parties – such as incumbent users or many potential users of bands under study – do not have the scale or resources to participate in this or other testbeds on their own. Similarly, NTIA must take care that neither the national testbed nor other testbeds that may be established in connection with implementing the National Spectrum Strategy become effectively controlled or otherwise dominated by any group or party with a vested interest in the outcome.

As NTIA prepares and finalizes the implementation plan for the National Spectrum Strategy, Southern urges NTIA to ensure that the plan recognizes the spectrum and communications needs of utilities and other critical infrastructure entities and incorporates those needs in a clear and direct fashion.

Respectfully submitted,

/s/ Adrienne Collins
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³² *Id.* at 16-17.