

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554**

In the Matter of)	
)	
Review of the Commission's Rules)	WT Docket No. 17-200
Governing the 896-901/935-940 MHz)	
Band)	

To: The Commission

**COMMENTS OF
SOUTHERN COMPANY SERVICES, INC.**

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Dated: October 2, 2017

EXECUTIVE SUMMARY

Southern Company Services, Inc. (“Southern”) operates an extensive Advanced Meter Infrastructure (“AMI”) system that uses Narrowband PCS spectrum in the 901-902/940-941 MHz band immediately adjacent to the 896-901/935-940 MHz band (the “900 MHz band”). Because its AMI system operates in the spectrum immediately adjacent to the 900 MHz band, Southern is concerned over the potential for interference to its AMI system and therefore has significant interest in this proceeding.

Southern has made a substantial investment in its AMI system, which has been deployed throughout Southern’s service territory across multiple states. Southern has now been operating this extensive AMI system with minimal interference issues for more than nine years and continues to deploy new devices and to develop and add new functionality to the system to further enhance the safety, reliability, and efficiency of its extensive electric and gas distribution system. Current and future uses of AMI data and functionalities continue to expand, and any disruption of AMI services due to interference, now or in the future, will significantly hamper the ability of Southern and other utilities to continue to provide electric and gas service to the public on a safe, reliable, and efficient basis.

Although Southern does not take any position at this time regarding which of the possible paths outlined in the *NOI* the Commission should pursue for the 900 MHz band, the Commission must ensure that any modifications that it may make to the 900 MHz band – whether through revised operational rules or through a reconfiguration of the band – do not result in interference to existing services in the adjacent Narrowband PCS band.

Of the various questions and proposals laid out in the *Notice of Inquiry* (“*NOI*”), the ones that raise the greatest concerns for Southern – as an adjacent-band licensee – are those related to reconfiguring the 900 MHz band to create a new broadband service.

Southern fully recognizes the ways in which broadband can provide effective and valuable support to utility operations, and Southern generally supports efforts to expand the availability of broadband spectrum for utility and critical infrastructure industry (“CII”) communications needs. However, these efforts should not come at the expense of existing licensees and operations in the 900 MHz band and adjacent bands, and the Commission must ensure that the interests and operational needs of existing licensees in or adjacent to the 900 MHz band are protected.

Southern takes no position at this time as to whether the Commission should create a broadband service in the 900 MHz band or, if so, which band plan should be used. At this point, Southern simply observes that a plan that places as much separation as possible between the 900 MHz band and the adjacent Narrowband PCS band would significantly mitigate the potential for interference to utility and CII systems in the Narrowband PCS band. Furthermore, if the Commission should decide to create a broadband service in the 900 MHz band, Southern urges the adoption of technical and operational rules sufficient to avoid interference and prevent disruption to utility operations in the adjacent Narrowband PCS band. These rules should be codified and made applicable to any 900 MHz broadband licensee in order to provide certainty and predictability.

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COMMENTS OF SOUTHERN COMPANY SERVICES, INC.

Southern Company Services, Inc. ("Southern") hereby submits its comments in response to the Commission's *Notice of Inquiry* in the above-captioned proceeding requesting comment on the potential for modification to the operational rules and band configuration for the 896-901/935-940 MHz band ("900 MHz band").¹

Southern's initial comments in response to the *NOI* focus on its significant concerns over the potential for interference to the extensive Advanced Meter Infrastructure ("AMI") systems that have been deployed by Southern and other electric utilities across the nation in the Narrowband PCS band immediately adjacent to the 900 MHz band. As explained herein, the Commission must ensure that any modification of the configuration of or the operating rules for the 896-901/935-940 MHz band avoid harmful or disruptive interference to services in adjacent bands and sufficiently protect the interests and operational needs of existing licensees.

¹ / *Review of the Commission's Rules Governing the 896-901/935-940 MHz Band*, WT Docket No. 17-200, Notice of Inquiry, FCC 17-108 (rel. Aug. 4, 2017) ("*Notice of Inquiry*" or "*NOI*").

I. BACKGROUND

Southern Company Services, Inc. is a wholly owned subsidiary service company of Southern Company, a holding company based in Atlanta, Georgia, which operates 11 regulated utilities serving 9 million customers in nine states. Southern Company owns four electric utility subsidiaries – Alabama Power Company, Georgia Power Company, Gulf Power Company, and Mississippi Power Company – which provide retail and wholesale electric service throughout a 120,000 square mile service area in Alabama, Georgia, Florida, and Mississippi. Southern Company 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 nine states. Southern Company Gas provides natural gas distribution and storage in seven states: Illinois, Georgia, Virginia, New Jersey, Florida, Tennessee, and Maryland.

Collectively, members of the Southern Company family use a variety of communications technologies and services to support the safe, reliable, and efficient delivery of energy services to their customers. One of Southern’s communications solutions is an extensive Advanced Meter Infrastructure (“AMI”) system that uses Narrowband PCS spectrum in the 901-902/940-941 MHz band to interact with over 4.4 million meters and other remote devices throughout its operating territory, with an additional 2.2 million endpoint devices projected to be brought online over the next five years. As explained below, Southern’s AMI system is part of a comprehensive infrastructure modernization program that provides benefits to electric and gas customers, the environment, and the company far beyond the convenience of remote meter reading.

Because its AMI system operates in the Narrowband PCS spectrum immediately adjacent to the 896-901/935-940 MHz band, Southern is concerned over the potential for interference to its AMI system and therefore has significant interest in this proceeding. Southern’s interest is

further demonstrated by its active participation in the Commission's public notice and comment proceeding on one of the petitions that precipitated the issuance of the current *NOI*.² In particular, Southern submitted comments and reply comments in response to the Petition for Rulemaking filed in 2014 by the Enterprise Wireless Alliance ("EWA") and Pacific DataVision, Inc. ("PDV") proposing the restructuring of the 900 MHz band to create a 3/3 MHz broadband segment.³ Southern also filed comments and reply comments in response to the filing by EWA/PDV of a supplement to their initial petition.⁴ In each of these filings, Southern expressed its concerns over the potential for interference that the EWA/PDV proposal posed to existing services in the adjacent Narrowband PCS band, as well as the consistent lack in the record of tangible information or proposals from EWA/PDV regarding how any such interference would be avoided. Though Southern and PDV have engaged in discussions over potential solutions to avoid or mitigate potential harmful interference, these concerns currently remain unresolved, and Southern hereby incorporates its previous filings on the EWA/PDV Petition by reference into the record of this docket.

² / Petition for Rulemaking of the Enterprise Wireless Alliance and Pacific DataVision, Inc., RM-11738 (filed Nov. 17, 2014) ("EWA/PDV Petition").

³ / *Wireless Telecommunications Bureau Seeks Comment on Enterprise Wireless Alliance and Pacific DataVision, Inc. Petition for Rulemaking Regarding Realignment of 900 MHz Spectrum*, Public Notice, 29 FCC Rcd 14424 (2014); Comments of Southern Company Services, Inc., RM-11738 (filed Jan. 12, 2015); Reply Comments of Southern Company Services, Inc., RM-11738 (filed Jan. 27, 2015).

⁴ / *Wireless Telecommunications Bureau Seeks Comment on Supplement to Enterprise Wireless Alliance and Pacific DataVision, Inc. Petition for Rulemaking Regarding Realignment of 900 MHz Spectrum*, Public Notice, 30 FCC Rcd 4763 (2015); Comments of Southern Company Services, Inc., RM-11738 (filed June 29, 2015); Reply Comments of Southern Company Services, Inc., RM-11738 (filed July 14, 2015).

II. SOUTHERN'S 900 MHZ AMI SYSTEM

Southern has made a substantial investment in its AMI system, including the deployment of more than 765 transceivers and over 4.4 million endpoint devices to date, with additional transceivers being added every year and an additional 2.2 million endpoint devices projected to be deployed and operational over the next five years. These devices are deployed throughout Southern's service territory across multiple states. Due to the size and geographic diversity of its service territory, the number of endpoint devices that must be served (both now and in the future), and the level of reliability needed for adequate performance, Southern selected the FlexNet system operating on licensed Narrowband PCS spectrum for its AMI system. Southern has now been operating this extensive AMI system with minimal interference issues for more than nine years and continues to deploy new devices and to develop and add new functionality to the system to further enhance the safety, reliability, and efficiency of its extensive electric and gas distribution system.

A. Southern's AMI System is a Critical Part of its Electric and Gas Distribution System

Southern's AMI system supports its electric and gas distribution system by providing necessary information that goes well beyond collecting usage data for billing purposes. As described below, the AMI system provides status information and certain operational control features for energy management, giving Southern significant insights into the operational status of the power grid down to each specific endpoint device and enabling Southern to maintain the quality, reliability, and efficiency of its electric distribution system during "blue sky" conditions as well as during recovery and restoration operations following a severe storm or other disaster.

The AMI system allows for real-time situational awareness and grid stabilization through its ability to identify electric service outages to specific device locations, send real-time alerts to

the company, and to provide important data on the outage itself. For example, in the case of a widespread outage, remote devices on the AMI system provide the company's Outage Management System with important data on the areas affected, the likely components of the electric system that have failed or tripped, the critical loads (such as hospitals, fire stations, or traffic management facilities) that must be restored on a priority basis, and the status of grid components and customer locations that are ready to have power restored to them. All of these are functions that previously would have required a site visit by company personnel – which is very time-consuming and can be especially difficult during storm recovery – and which can now be performed remotely with data supplied over the AMI system.

A very recent example of the valuable role that such extensive, real-time data collection can play in the operation of the electric grid can be found in Georgia Power's recovery operations following Hurricane Irma. Although the impact was not as severe as what was experienced in Florida, Hurricane Irma nevertheless caused extensive damage as it swept through Georgia on Monday, September 11, 2017, knocking out power to nearly 1 million Georgia Power customers statewide, which is equivalent to roughly 50% of the company's residential customer base. Despite the unprecedented scale of this outage, Georgia Power was nevertheless able to restore electric service to approximately 525,000 customers within 24 hours, to approximately 830,000 customers within 48 hours, and to approximately 990,000 customers (99% of those who had lost power) by Saturday, September 16 – scarcely five days after the storm struck.⁵ During this time, the company's Outage Management System was able to provide

⁵ / From September 11 through September 16, 2017, Georgia Power issued news releases on the status and progress of its Hurricane Irma outage and recovery efforts. These news releases are available on the Georgia Power website at <https://www.georgiapower.com/about-us/media-resources/newsroom.cshtml> (last visited Oct. 2, 2017).

field crews, dispatchers, and Distribution Control Centers with detailed outage information updated every five minutes using data provided by Southern's AMI system.

In addition to outage management and recovery, Southern's AMI system plays an essential role in improving the everyday quality, reliability, and efficiency of the electric distribution system through its ability to inform system maintenance and design. For example, data collected at ever-shortening intervals and at an ever-increasing level of granularity are used by Southern's engineers to monitor service quality, to determine the health of capacitor banks and transformers (which allows Southern to proactively service or replace these critical components), and to plan for correct transformer sizing. The near real-time operation of the AMI system allows Southern to monitor voltage levels at specific points in its electric distribution system and to repair or replace failing equipment before the equipment actually fails, thus preventing outages or interruptions in its customers' electric services. Load data provided by the AMI system will also allow Southern to more accurately predict electric demand, thus allowing more cost-effective scheduling of power generation to meet the changing demand, which in turn will contribute to greater reliability of electric service and reduced environmental impacts.

Southern's AMI system also enables certain remote control functions, such as the "Re-Connect/Disconnect" meter capability that allows the company to remotely disconnect electric service from or re-connect electric service to a specific customer meter. By eliminating the need for electric service to be connected or disconnected manually on-site by company personnel, Southern estimates that this "Re-Connect/Disconnect" application alone has eliminated over 51,000 truck rolls per month, and the number of truck rolls eliminated continues to grow as additional AMI-enabled remote capabilities are deployed.

The data generated and functions enabled by the AMI system can be used directly by customers as well. For example, the AMI system is used for Southern's Demand Response program, enabling customers to monitor and manage their energy usage and to adjust the timing or amount of their energy consumption. The AMI system also enables various rate options that customers can voluntarily take advantage of, such as time-of-use pricing, real-time pricing, and pre-payment for electric service.

B. Interference from Operations in the 900 MHz Band Could Seriously Disrupt and Degrade Southern's AMI System

Southern's experience demonstrates that an effective AMI system is a critical component of the modern energy grid. Current and future uses of AMI data and functionalities continue to expand, and any disruption of AMI services due to interference, now or in the future, will significantly hamper the ability of Southern and other utilities to continue to provide electric and gas service to the public on a safe, reliable, and efficient basis.

Southern's AMI system was designed to be spectrum-efficient while providing coverage throughout its extensive and topographically diverse service area. Unwanted emissions, whether from adjacent channel operations or otherwise, that result in increased interference could seriously degrade, obstruct or disrupt Southern's AMI system. As Southern has previously demonstrated to the Commission, an additional 5 dB of interference could have a significant adverse impact on Southern's AMI system.⁶ There could be means for eliminating, or at least substantially mitigating, such interference or the impact of such interference, but this issue must be fully reviewed and evaluated by the Commission as part of its consideration of possible changes to current regulatory framework for the 900 MHz band.

⁶ / *Ex Parte* Presentation of Sensus USA, Inc. and Southern Company Services, Inc., RM-11738 (filed July 28, 2015).

If the Commission were to adopt any changes to the 900 MHz band that would result in increased emissions into the adjacent Narrowband PCS band, Southern and other utilities would be compelled to deploy a substantial number of additional AMI transceivers at significant cost simply to maintain the same level of performance that they currently have. Accordingly, as discussed below, the Commission must ensure that any modifications that it may make to the 900 MHz band – whether through revised operational rules or through a reconfiguration of the band – do not result in interference to existing services in the adjacent Narrowband PCS band.

III. THE COMMISSION MUST ENSURE THAT ANY MODIFICATIONS TO THE 900 MHZ BAND AVOID INTERFERENCE TO SERVICES IN ADJACENT BANDS

In its *NOI*, the Commission states that it is “broadly seek[ing] comment on whether the public interest would be served by making changes to the existing regime in the 900 MHz band.”⁷ The Commission’s specific questions are presented in the context of three different options for the future use of the 900 MHz band that have been discussed in the records of the rulemaking petitions that led up to the *NOI*:

- Retaining the existing band configuration, but increasing operational flexibility;⁸
- Reconfiguring the band to create a broadband service;⁹ or
- Retaining the current licensing and eligibility rules.¹⁰

Southern’s primary concern at this stage of this proceeding is ensuring that any modifications that the Commission may consider making to the operational rules or configuration of the 900 MHz band do not result in any increase in the potential for interference

⁷ / *NOI* at ¶ 17.

⁸ / *NOI* at ¶¶ 19-25.

⁹ / *NOI* at ¶¶ 26-40.

¹⁰ / *NOI* at ¶¶ 41-43.

to services in the adjacent Narrowband PCS band, where Southern has deployed its AMI system. Southern does not take any position at this time regarding which of the possible paths outlined in the *NOI* the Commission should pursue for the 900 MHz band; rather, Southern's initial comments will focus on the measures that would need to be adopted in order to avoid interference to services in adjacent bands.¹¹

A. Reconfiguration of the 900 MHz Band to Create a Broadband Service

Of the various questions and proposals laid out in the *NOI*, the ones that raise the greatest concerns for Southern – as an adjacent-band licensee – are those related to reconfiguring the 900 MHz band to create a new broadband service.¹²

As an initial matter, Southern fully recognizes the ways in which broadband can provide effective and valuable support to utility operations, and Southern generally supports efforts to expand the availability of broadband spectrum for utility and critical infrastructure industry (“CII”) communications needs. Dedicated broadband service provides utilities and CII the high data capacity and low latency necessary for the deployment of technologies and applications that support the increasing reliability, security, and efficiency needs of the nation's energy infrastructure. However, efforts to expand the availability of broadband spectrum for utility and CII users should not come at the expense of existing licensees and operations in the 900 MHz band and adjacent bands, especially considering that many of these licensees are themselves utility and CII entities. To the extent the Commission should determine that any changes in the

¹¹ / Although Southern does not take a position at this time concerning the appropriate path forward for the 900 MHz band, any modifications or reconfiguration that may be made to this band should be done so in a way that fully protects the interests and operational needs of incumbent 900 MHz licensees.

¹² / *NOI* at ¶¶ 26-40.

configuration of the 900 MHz band are warranted, it must ensure that the interests and operational needs of existing licensees in or adjacent to the 900 MHz band are protected.

In the *NOI*, the Commission observes that if it were to create a broadband service in the 900 MHz band, it “would need to consider rule changes to avoid interference between a broadband licensee and narrowband licensees in adjacent spectrum segments and possible rule changes to avoid interference to services in adjacent bands.”¹³ The Commission does not suggest any specific changes in the *NOI*, but generally requests comment on the necessary rules and physical and technical parameters and asks whether those rules and parameters “would be sufficient to prevent disruption to low-latency, high-reliability utility operations.”¹⁴

As discussed in these comments, and as discussed in detail in the filings by Southern and numerous other parties in response to the EWA/PDV Petition, the introduction of a new broadband service in the 900 MHz band has significant potential to create interference to services in adjacent bands unless appropriate measures are adopted by the Commission.¹⁵ More recently, Southern has had ongoing, constructive dialogue with PDV concerning these issues. Against this background, Southern hereby provides its observations and recommendations in response to the Commission’s questions in the *NOI*.

B. Proposed Band Plans for a Broadband Service in the 900 MHz Band

The EWA/PDV Petition proposed realigning the 900 MHz band into a 3/3 MHz broadband segment at the upper end of the band (898-901/937-940 MHz) and a 2/2 MHz

¹³ / *NOI* at ¶ 40.

¹⁴ / *Id.*

¹⁵ / See notes 3 and 4, *supra*; See also Comments of Alliant Energy Corporate Services, RM-11738 (filed Jan. 2, 2015); Comments of PECO Energy Company, RM-11738 (filed Jan. 2, 2015); Comments of the Utilities Telecom Council RM-11738 (filed Jan. 2, 2015).

narrowband segment at the lower end of the band (896-898/935-937 MHz).¹⁶ In the *NOI*, the Commission asks whether a 3/3 MHz paired block would be sufficient, and, if so, whether this 3/3 MHz block should be located on one or the other edge of the 900 MHz band, or in the middle with a 1/1 MHz narrowband block on either side.¹⁷ The Commission also asks whether the 900 MHz band should be fully reconfigured to create a 5/5 MHz broadband channel that takes up the entire band.¹⁸

Southern takes no position at this time as to whether the Commission should create a broadband service in the 900 MHz band or, if so, which band plan should be used. At this point, Southern simply observes that the band plan initially proposed by EWA and PDV – i.e., a 3/3 MHz broadband segment at the upper end of the 900 MHz band – would pose the highest risk of interference to licensees in the adjacent Narrowband PCS band, as it would put the proposed new broadband operations right up against the Narrowband PCS band with effectively no guard band or other separation between these services. Southern further observes that either moving the proposed 3/3 MHz broadband segment to the lower end of the 900 MHz band (to 896-899/935-938 MHz) or placing the 3/3 MHz broadband segment in the middle of the 900 MHz band with a 1/1 MHz narrowband segment on either side would significantly mitigate the potential for interference to utility and CII systems in the Narrowband PCS band by creating greater separation between these services.

In addition, Southern observes that fully reconfiguring the 900 MHz band to create a 5/5 MHz broadband channel would also result in less potential for interference to services in the adjacent Narrowband PCS band than the plan initially proposed by EWA and PDV, since the

¹⁶ / See *NOI* at ¶ 12.

¹⁷ / *NOI* at ¶ 27.

¹⁸ / *NOI* at ¶ 28.

“outer edge” of a 5 MHz LTE channel provides greater effective separation than a 3 MHz LTE channel would between broadband operations in the 900 MHz band and narrowband operations in the Narrowband PCS band, although appropriate filters and other technical measures limiting out of band emissions would still be required.

Again, Southern takes no position at this time as to which band plan – if any – the Commission should adopt, but merely presents its observations on adjacent-band interference.

C. Technical and Operational Rules and Parameters for a Broadband Service in the 900 MHz Band

If the Commission should decide to create a broadband service in the 900 MHz band, Southern urges the adoption of technical and operational rules sufficient to avoid interference and prevent disruption to utility operations in the adjacent Narrowband PCS band. These rules should be codified and made applicable to any 900 MHz broadband licensee in order to provide certainty and predictability.

In particular, the Commission should adopt an appropriate emissions mask and other technical parameters to ensure that any out of band emissions into the Narrowband PCS band are maintained at a sufficiently low level. Southern also urges the adoption of preemptive operational requirements to avoid interference to services in adjacent bands, such as prior coordination with adjacent-band licensees, collocation, field testing of equipment prior to deployment, etc. In addition, Southern recommends the adoption of requirements for the 900 MHz broadband licensee to mitigate and resolve interference to services in adjacent bands, which could be modeled on the interference resolution measures adopted for the 800 MHz band in Sections 90.672 through 90.675 of the Commission’s Rules.

IV. CONCLUSION

As demonstrated above, an effective AMI system is a critical component of the modern energy grid. Current and future uses of AMI data and functionalities continue to expand, and any disruption of AMI services due to interference, now or in the future, will significantly hamper the ability of Southern and other utilities to continue to provide electric and gas service to the public on a safe, reliable, and efficient basis. Although Southern does not take any position at this time regarding which of the possible paths outlined in the *NOI* the Commission should pursue for the 900 MHz band, the Commission must ensure that any modification of the configuration of or the operating rules for the 900 MHz band avoid interference to services in adjacent bands and sufficiently protect the interests and operational needs of existing licensees.

WHEREFORE, THE PREMISES CONSIDERED, Southern respectfully requests the Commission to take action in this docket consistent with the views expressed herein.

Respectfully submitted,

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