

**BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C. 20554**

In the Matter of )  
 )  
FELHC, Inc., BPC Spectrum LLC, Dominion 700, )  
Inc., and Access 700, LLC Request for Waiver )  
and Extension of Substantial Service )  
Requirement for Upper 700 MHz A Block )  
Licenses )

**To: Chief, Wireless Telecommunications Bureau**

**REQUEST FOR AN EXTENSION OR WAIVER  
OF SUBSTANTIAL SERVICE REQUIREMENT**

FELHC, Inc. (“FELHC”) is the license-holding subsidiary of FirstEnergy Corp. (“FE”), one of the nation’s largest investor-owned electric systems. FELHC has been assigned or is in the process of being assigned partitioned Upper 700 MHz A Block spectrum by, respectively, BPC Spectrum LLC, Dominion 700, Inc., and Access 700, LLC (the “Licensees”, and together with FELHC, the “Parties”),<sup>1</sup> for the counties listed in Exhibit A attached hereto (the “Licenses” and “License Areas”, respectively). The Licenses and License Areas have an expiration date of June 13, 2019 (the “Expiration Date”), by which substantial service must be shown in order for the Licenses to be renewed.

The Parties, pursuant to Sections 1.2, 1.3, 1.925, and 1.946(e)(1) of the rules of the Federal Communications Commission (“FCC” or “Commission”),<sup>2</sup> hereby request, in connection

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<sup>1</sup> FE and FELHC are the source of and are solely responsible for all FE-specific and utility use case information submitted in this Request, and the Licensees have relied on FE and FELHC for the development, preparation, and submission of all such information.

<sup>2</sup> 47 C.F.R. §§ 1.2, 1.3, 1.925, and 1.946(e).

with FE's deployment of a replacement utility communications network utilizing the Licenses across FE's utility footprint and the License Areas, an extension of time or waiver until December 31, 2022, for FELHC to meet the Commission's substantial service requirements, and clarification regarding the application of these requirements.

## **I. Introduction**

As discussed more fully below, FE has put in place an aggressive plan to use the Licenses to deploy, throughout its service territory, a private, internal radio system to support FE's utility operations and the reliable monitoring and control of electrical equipment at thousands of locations across FE's footprint. This new wireless-based system will be used to replace legacy, analog copper communications facilities that are being retired by the telecommunications industry as part of the technology transition from copper to IP-based networks. As the Commission is aware, identifying suitable, dedicated spectrum for critical utility communications needs has been a particularly vexing issue for the utility industry, and FE, after a years-long effort to identify suitable and available spectrum for this purpose, has determined that the Upper 700 MHz A Block spectrum ("Upper 700 MHz A Block"), which is available throughout its service territory, meets the necessary criteria for use by the company to support its system-wide utility operations. Accordingly, earlier this year, FELHC concluded agreements with the Licensees for the assignment of the Licenses, which have been or are expected to be partitioned from the Licensee's Upper 700 MHz A Block spectrum, and which will allow FE to deploy a new wireless-based communications system throughout its service territory beginning in 2017, with substantial completion of the system by 2022.

While FE's deployment plan calls for substantial build-out progress across its territory by the Expiration Date, the sheer breadth of its new system and the need to deploy the system in stages across its service territory mean that FE will need until 2022 to substantially complete the initial phase of its build-out across all of the Licenses and License Areas. The Parties thus request that FELHC be granted an extension of time or waiver until December 31, 2022, to meet the substantial service requirements.

The Parties also request that the Bureau clarify that the coverage of devices used for communicating with electrical assets is a reasonable proxy for calculating population coverage for purposes of meeting the substantial service safe harbor. FE's methodology and assumptions for translating 700 MHz device deployments to population coverage are set forth in Exhibit B. As the Mobility Division has recognized, population-based coverage requirements are not particularly well-suited to utility wireless use cases,<sup>3</sup> and a proxy for a population-based safe harbor requirement based on the coverage of devices communicating to electrical assets would be appropriate here.

## **II. Background**

Headquartered in Akron, Ohio, FE is one of the nation's largest investor-owned electric systems, with more than 24,000 miles of transmission lines and ten regulated distribution companies, serving six million customers in the Midwest and Mid-Atlantic regions. FE, like other utilities, relies heavily on the use of telecommunications, including to communicate with electrical devices in substations and on transmission and distribution lines, which ultimately

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<sup>3</sup> See Order, *AT&T Mobility Spectrum LLC, BellSouth Mobile Data, Inc., New Cingular Wireless PCS, LLC, and SBC Telecom, Inc., Petition for Limited Waiver of Interim Performance Requirement for 2.3 GHz WCS C and D Block Licenses*, WT Docket No. 16-181, DA 17-78 (Rel. Jan. 18, 2017) (“AT&T WCS Waiver Order”).

provide vital services to customers. These services support voice, data, Supervisory Control & Data Acquisition / Energy Management System (SCADA/EMS), two-way radio, and transport communications, which in turn promote the safe, effective, and reliable operation of the electric grid, including the support of smart grid networks -- sensing, control, and communications technologies that monitor and control utility operations. As the Commission has recognized, the deployment of smart-grid facilities is “a national priority.”<sup>4</sup>

In response to the telecommunications industry’s ambitious schedule to eliminate legacy analog copper communications systems, FE has been forced to explore options to migrate from copper services. At the same time, growing interference in the Part 15 bands currently used by FE forced the company to explore secondary market licensed spectrum options for its wireless communications.

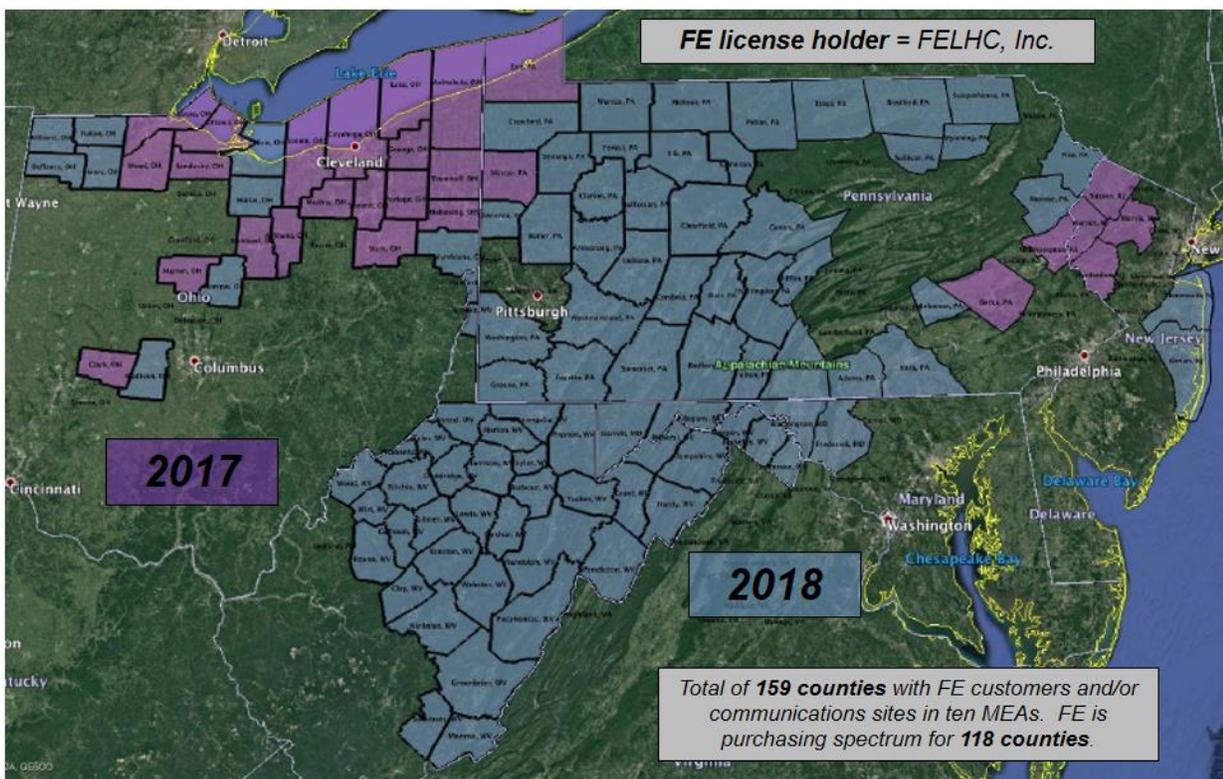
After a years-long effort to identify suitable and available spectrum, FE determined that the Upper 700 MHz A Block, which is available throughout its service territory, meets the necessary criteria to support its utility operations system-wide. As discussed in more detail below, FE found that the Upper 700 MHz A Block represents a ubiquitous solution to meet virtually all existing use cases for electric utility operational communications. It was the only available spectrum alternative that did so.

Following that determination, FE concluded agreements earlier this year with each of the Licensees for the assignment of Upper 700 MHz A Block spectrum across an area that is coincident with FE’s service territory, covering 118 counties and spanning ten Major Economic

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<sup>4</sup> Connecting America: The National Broadband Plan at 249 (2010), available at [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-296935A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-296935A1.pdf) ("National Broadband Plan").

Areas (MEAs).<sup>5</sup> The Parties recently filed applications for consent to partition to FELHC the Licensees' respective spectrum in 118 counties located in Ohio, Pennsylvania, New Jersey, West Virginia, and Maryland, and the Commission consented to those applications. The closing of the transactions and acquisition of the Licenses by FELHC is occurring in two stages (labeled as 2017 and 2018 "Spectrum Rights" in Exhibit A). See the map below. The assignment of the 2017 Spectrum Rights occurred earlier this year, while closing and assignment for the remaining Licenses is expected to occur in 2018.<sup>6</sup>



<sup>5</sup> See Exhibit A.

<sup>6</sup> See generally ULS File Nos. 0007675245 (consented to and consummated), 0007703403 (consented to), 0007705033 (consented to), and 0007712585 (consented to).

The spectrum will be used entirely for private, internal purposes to support FE's utility operations, with the primary use to support the reliable monitoring and control of electrical equipment at thousands of locations across the FE service territory.

### **III. The Licenses Are Critical to FE's Transition to Next-Generation Communications Systems**

#### **A. Telecommunications Industry IP Transition and Impacts on FE**

Like other utilities, FE is considered a Critical Infrastructure Industry (CII) under the FCC's rules.<sup>7</sup> Indeed, electric utilities, as a CII in the Energy Sector, serve one of four lifeline functions providing essential power to all critical infrastructure sectors, without which none could operate properly.<sup>8</sup> This means that reliable operation of the utility industry "is so critical that a disruption or loss of energy function will directly affect the security and resilience of other critical infrastructure sectors."<sup>9</sup> Yet, as the Department of Homeland Security recognizes in its Energy Sector Plan, electric utilities themselves depend on many other critical infrastructure sectors, including robust and reliable communications technologies.<sup>10</sup>

Historically, FE has relied on copper-based services provided by telecommunications carriers, which include DS0, DS1, and (formerly) Centrex service. Copper-based services are used in support of company operations involving voice, data, SCADA/EMS, two-way radio, and transport communications. These five categories support critical operational and business functions, *including monitoring and control of electrical infrastructure.*

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<sup>7</sup> 47 C.F.R. § 90.7.

<sup>8</sup> U.S. Dept. of Homeland Security, Energy Sector-Specific Plan at 19 (2015), available at <https://www.dhs.gov/sites/default/files/publications/nipp-ssp-energy-2015-508.pdf>.

<sup>9</sup> *Id.*

<sup>10</sup> *Id.* at vii.

The telecommunications industry, however, is undergoing dramatic changes as it transitions from a circuit-switched copper-based network to an Internet Protocol (IP) network relying on fiber and wireless technologies. To address these changes, the FCC on August 7, 2015 released its *Technology Transitions Order*.<sup>11</sup> The *Technology Transitions Order* is significant for the electric utility industry because it established the rules that telecommunications providers must follow before retiring copper facilities or when they seek to discontinue, reduce, or impair associated services to customers. The *Technology Transitions Order* required that telecommunications providers give just 180 days notice prior to retiring legacy facilities and services, including those utilized by FE. The Commission recently proposed revisiting even this limited 180-day notice period.<sup>12</sup>

As telecommunications providers migrate away from legacy analog technologies, they also reduce support for the underlying infrastructure (e.g. personnel, responsiveness, spare parts, redundancy, etc.). Consequently, the reliability of leased communications has steadily declined and is likely to degrade further during the technology transition. Many utility locations served by legacy copper-based services are located in rural or remote areas not served by fiber. Electric utilities are some of the last companies across the nation that still depend on analog communications for critical operations. Therefore, locating and implementing effective replacement solutions for the electric utility industry is an urgent need.

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<sup>11</sup> See Report and Order, Order on Reconsideration, and Further Notice of Proposed Rulemaking and Declaratory Ruling, *Technology Transitions, et al.*, 30 FCC Rcd 9372 (2015) (“*Technology Transitions Order*”).

<sup>12</sup> See Notice of Proposed Rulemaking, Notice of Inquiry, and Request for Comment, *Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, WC Docket 17-84, FCC 17-37, ¶ 59 (Apr. 20, 2017).

**B. Electric Utility Industry Need for Spectrum and FE's Selection of the Upper 700 MHz A Block**

A critical element of the electric utility industry's communications migration is to secure licensed spectrum that meets the necessary range, propagation, bandwidth, and latency characteristics required for electric utility applications to support the reliability, resiliency, performance, and efficiency of the electric power grid. Existing unlicensed alternatives, such as the 902-928 MHz band, no longer meet this criterion, as the interference "noise floor" in such bands exceeds acceptable levels due to the rapid proliferation of commercial Internet of Things (IoT) devices using the same spectrum. For example, Gartner estimates that by 2020 there will be 20.8 billion "connected things" operating on these unlicensed frequencies, due to the exponential growth of IoT devices.<sup>13</sup>

Given the growing interference issues on 900 MHz unlicensed spectrum, the Electric Power Research Institute (EPRI) Telecom Transition Advisory Group, on which FE serves multiple leadership roles, has been charged with researching electric utility options for licensed spectrum. However, most licensed spectrum allocations are congested, scattered among different spectrum bands, and shared with other spectrum users. Moreover, the limited availability of licensed spectrum suitable for utilities has been identified as a key obstacle to their ability to deploy smart grid networks and other advanced communications-based technologies.<sup>14</sup>

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<sup>13</sup> *Gartner Says 6.4 Billion Connected "Things" Will Be in Use in 2016, Up 30 Percent From 2015*, November 10, 2015, available at <http://www.gartner.com/newsroom/id/3165317>.

<sup>14</sup> See National Broadband Plan at 251; Utilities Telecom Council, *The Utility Spectrum Crisis: A Critical Need To Enable Smart Grids* (Jan. 2009), available at <https://ecfsapi.fcc.gov/file/6520194487.pdf>.

The Upper 700 MHz A Block represents a widely available solution that provides sufficient bandwidth and range to meet the majority of utilities' operational communications needs. This spectrum is a key enabler for the telecommunications industry's transition to IP, since it provides an effective mechanism to compensate for the electric utility industry's loss of leased copper facilities. All major telecom carriers within FE's service territory have announced the decommissioning of copper-based services. As an example, AT&T decommissioned frame relay in early 2016 and expects to retire all TDM services by 2020. In New Jersey, Verizon announced the closure of 67 copper wire centers by mid-2018. This rapid retirement of critical leased communications services underscores the utility industry's critical need for an alternative solution.

Compared to the Upper 700 MHz A Block, other spectrum options are generally not effective solutions for electric utility use cases. FE covers 67,000 square miles of service territory from the Indiana border to the Atlantic Ocean. Much of this territory is rural and remote, in hilly and mountainous areas. Considering FE's diverse terrain and the long distances between electrical devices (i.e., substations and line equipment), the Upper 700 MHz A Block provides the necessary range and propagation, in contrast to microwave solutions (i.e., above 1 GHz). Bandwidth requirements rule out narrowband alternatives, since those solutions typically do not have the capacity to support multiple utility applications over a common communications path. FE evaluated other secondary market options and determined that the Upper 700 MHz A Block is the only option that meets all the company's requirements across its widespread distribution territories.

Other spectrum options are only sporadically available, depending on previous license grants to other entities. Given FE's need to migrate all of its existing legacy SCADA communications to supportable and more capable technologies, use of "as available" patchwork alternatives would create an unsupportable, complex, and heterogeneous environment and significantly delay a deployment that encompasses thousands of locations. Such a delay would ultimately put at risk FE's ability to mitigate the impact of the telecommunications industry's migration from the analog/copper-based services that FE currently utilizes. In addition, fiber is cost-prohibitive for all but the largest substations, due to the significant construction required across rural and remote territories.

### **C. FE's Communications Migration**

Several years ago, FE initiated a substantial, accelerated investment program to upgrade its telecommunications equipment to meet the timelines specified in the *Technology Transitions Order* as carriers announce the sunset of private analog services. To address this challenge, FE is using multiple approaches, including expansion of internal network assets such as fiber and wireless technologies and the use of substitute leased services (MPLS, cellular). Since substitute leased services are often very limited and not cost effective, a move to internally owned assets is typically the preferred option. Private communications systems afford greater security and reduced reliance on shared infrastructure, qualities that are especially important for the monitoring and control of electric assets.

This multi-year transformation of FE's communication environments will reduce dependence on third party providers, improve reliability, and harden security against evolving threats. It will provide the bandwidth to enable other capabilities at critical sites, including

security cameras, asset health monitoring, and other reliability-focused systems to protect the integrity of the electric system. The core communications infrastructure may also be leveraged to replace unreliable protective relaying transport systems (*e.g.* Power Line Carrier, analog microwave, etc.) with upgraded optical systems, such as high-speed Synchronous Optical Network (SONET) and Multi-Protocol Label Switching (MPLS). Further expansion of fiber in support of these systems creates path diversity, enabling migration from leased services to internally owned assets.

FE is in the midst of a seven-year program to upgrade its fiber backbone. It has a substantial investment plan to deploy a fiber backbone and leverage the Upper 700 MHz A Block to reach electrical substations, lines, and facilities that serve the population throughout the affected counties. This plan requires a topology buildout from Data Centers and Control Centers in the western part of the service territory. FE's proposed Upper 700 MHz A Block build-out thus is planned to occur coextensively with its fiber buildout. Since FE's data centers and major control centers are in the western part of the service territory, this backbone is being deployed from west to east. FE's objective is to install 700 MHz base station radios at its fiber optics backbone locations in order to communicate wirelessly to the outlying transmission and distribution substations and line devices. The counties included in FE's 2017 roll-out include those areas where FE already has significant backhaul in production and where the spectrum will be deployed most rapidly.

As FE deploys 700 MHz facilities, there are many electrical substations that require upgrades to SCADA equipment. To ensure uninterrupted electric service, each change requires the coordination of multiple FE departments, including transmission and distribution

operations and often the reliability coordinator (PJM) to approve outages. Such changes sometimes require manning of substations when SCADA is unavailable.

For these reasons, the migration of existing electric utility communications assets to a new system utilizing the Upper 700 MHz A Block will occur as part of a controlled evolution from 2017 to 2025, with this process approximately two-thirds complete by the end of 2022. Upon conclusion of FE's initial deployment of the Licenses in 2022, it is expected that there will be over 2,000 locations using the Upper 700 MHz A Block for monitoring and controlling electrical equipment that serves millions of customers. Following the initial deployment, equipment operating on the Upper 700 MHz A Block will continue to be deployed for other applications. FE has identified an estimated 3,200 locations where 700 MHz spectrum can be employed, including both existing sites and expected expansions over the forecast period. The spectrum will also be available for future advanced electric utility applications, such as distribution automation, volt-VAR control, distributed energy resources, and other emerging technologies.

**IV. The Bureau Should Grant FELHC an Extension of Time or Waiver until December 31, 2022, to Meet the Substantial Service Requirements Applicable to the 700 MHz A Block.**

**A. The Substantial Service Requirement Applicable to Upper 700 MHz A Block Licensees**

Upper 700 MHz A Block licensees are subject to the construction requirement of Section 27.14(a) of the Commission's rules, which provides that Upper 700 MHz A Block licensees, as a condition of renewal, must make a showing of "substantial service" in their license area within their prescribed license term -- in the case of the Licenses, by the June 13, 2019 Expiration

Date.<sup>15</sup> “Substantial service” is defined as service which is “sound, favorable and substantially above a level of mediocre service which just might minimally warrant renewal.”<sup>16</sup> Here, FELHC will be responsible for meeting the substantial service requirement for the License Areas assigned to it by the Licensees.<sup>17</sup>

In applying the substantial service requirement to the Upper 700 MHz A Block, the Commission specifically declined to impose other build-out milestones, channel usage obligations, or other more stringent requirements.<sup>18</sup> The Commission found that “strict performance requirements may undermine efficient use of the spectrum.”<sup>19</sup> At the same time, the Commission provided a safe harbor, whereby a licensee can satisfy its substantial service requirement if it provides coverage to 50 percent of the population of the service area at the license-renewal mark.<sup>20</sup> The Commission also recognized that while this safe harbor is intended to provide licensees a degree of certainty regarding compliance, the requirement can be met in other ways. The Commission explicitly found that the means of compliance will vary depending

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<sup>15</sup> See 47 C.F.R. §§ 27.607(a), 27.14(a), 27.13(b).

<sup>16</sup> 47 C.F.R. § 27.14(a).

<sup>17</sup> Under the partitioning rules applicable to the Upper 700 MHz A Block, the Parties have the option, selected here, of each Licensee and FELHC having responsibility to satisfy independently the substantial service requirement for its respective partitioned area. See Second Report and Order, *Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission’s Rules*, 15 FCC Rcd 5299, ¶ 84 (2000) (“700 MHz Guard Band Second Report and Order”).

<sup>18</sup> *Id.*, ¶ 75.

<sup>19</sup> *Id.*, ¶ 77.

<sup>20</sup> *Id.*, ¶ 78. The Commission also adopted a leasing safe harbor whereby an Upper 700 MHz A Block licensee can satisfy the substantial service requirement by leasing the predominant amount of its licensed spectrum in at least 50 percent of the geographic area covered by its license at the license-renewal mark. *Id.*

on the market and type of spectrum users served, and that showings will be reviewed on a case-by-case basis.<sup>21</sup>

Under the rural safe harbor for mobile services, which may be applied to the rural areas throughout FE's service territory, a licensee will be deemed to have met its substantial service requirement if it provides coverage to at least 75 percent of the geographic area of at least 20 percent of the "rural areas" within its licensed area. For fixed services, the rural safe harbor provides that the substantial service requirement is met if a licensee constructs at least one end of a permanent link in at least 20 percent of the number of "rural areas" within its licensed area.<sup>22</sup>

**B. The Bureau Should Grant FELHC an Extension of Time or Waiver to Allow It to Show Substantial Service by December 31, 2022**

The Parties request that the Bureau extend the substantial service deadline, or waive the substantial service showing required at renewal, such that FELHC can timely renew its Licenses across all License Areas and show substantial service by December 31, 2022. Section 1.946(e) of the Commission's rules allows for extension of time to meet construction requirements where a licensee demonstrates that failure to meet the construction deadline is

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<sup>21</sup> *Id.* Partitioning and disaggregation of Upper 700 MHz A Block licenses was originally authorized in the 700 MHz Guard Band Second Report and Order. *Id.*, ¶¶ 82-85. In 2007, the Commission replaced the Guard Band Manager regime with the spectrum leasing policies and rules adopted in the Secondary Markets proceeding, and also removed certain use and eligibility restrictions regarding licensee operations and leasing to affiliates. Report and Order and Further Notice of Proposed Rulemaking, *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, et al.*, 22 FCC Rcd 8064, ¶ 156 (2007). The Commission, however, has never revisited the substantial service requirements and guidance adopted in the 700 MHz Guard Band Second Report and Order, or limited their continued applicability to Upper 700 MHz A Block licensees or partitionees.

<sup>22</sup> See Report and Order and Further Notice of Proposed Rulemaking, *Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies To Provide Spectrum-Based Services, et al.*, 19 FCC Rcd 19078, ¶ 79 (2004) ("*Rural Report and Order*").

due to circumstances beyond its control.<sup>23</sup> In addition, under Section 1.3 of the rules, the Commission may waive its rules "for good cause shown, in whole or in part, at any time."<sup>24</sup> For the Wireless Radio Services, the Commission may also grant a waiver when either "[t]he underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and . . . grant of the requested waiver would be in the public interest," or "[i]n view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative."<sup>25</sup> As the Commission has found, these two rules require "substantially the same showing."<sup>26</sup> In either case, whether the relief sought is an extension of time or waiver, the question is whether such relief would be in the public interest.

Here, extension or waiver is required to allow for equipment change-out at thousands of locations in a reasonable manner that maintains the reliability of the electric system during this transition. Moreover, the need for additional time is also driven by the unique factual circumstances of the instant case – in particular, FE’s critical need for spectrum given the technology transition, the limited availability of alternative spectrum, and the unique nature of FE’s critical utility communications use case.<sup>27</sup> FE is migrating to the Upper 700 MHz A Block

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<sup>23</sup> 47 C.F.R. § 1.946(e)(1). In addition, Section 1.946(e)(2)-(3) sets forth a number of factors weighing against an extension that are not applicable here, such as a licensee’s failure to obtain financing, antenna sites, or equipment. See also *Wireless Telecommunications Bureau Reminds Wireless Licensees of Construction Obligations*, Public Notice, DA 17-573 (WTB rel. June 12, 2017) (“*Wireless Construction PN*”).

<sup>24</sup> 47 C.F.R. § 1.3.

<sup>25</sup> 47 C.F.R. § 1.925.

<sup>26</sup> Memorandum Opinion and Order, *Dish Network Corporation*, 28 FCC Rcd 16787, ¶ 11, n. 39.

<sup>27</sup> For example, in its comments to the FCC Technology Transition NPRM, the Edison Electric Institute (EEI) acknowledged the “lack of available spectrum” to electric utilities for use in critical infrastructure communications. See Comments of Edison Electric Institute in PS Docket No. 14-174, GN Docket No. 13-5, et al., at 2-3 (Mar. 9, 2015).

because of factors beyond the company's control, such as increased interference and the IP transition. Importantly, FE's identification of the Upper 700 MHz A Block and its unique suitability for its utility communications applications came after a years-long effort to identify suitable and available spectrum that could be ubiquitously deployed across its footprint.<sup>28</sup> Obviously, the timing of these circumstances could not possibly have been foreseen when the substantial service deadline for the Licenses was established.

Utility use of the Upper 700 MHz A Block is also consistent with direction from the FCC, which *has encouraged the electric utility industry and other CII entities to evaluate the secondary markets, including 700 MHz spectrum, as a solution to this need.*<sup>29</sup> As in the case of the *AT&T WCS Waiver Order*, where spectrum had been identified for utility use but additional time was required to deploy, it is in the public interest to extend and waive the applicable construction deadline. Doing so will allow utility access to spectrum to deploy and operate smart grid systems to ultimately serve and benefit millions of end-user customers.<sup>30</sup>

Here, FE's investment plan requires the replacement of hundreds of legacy leased circuits and build-out of private communications infrastructure across five states. Using customer counts and population in the 118 counties where Upper 700 MHz A Block spectrum is (or will be) licensed to FE, and its accelerated deployment plan, FELHC believes that it will be

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<sup>28</sup> Given these unique factors beyond the Parties' control, the Bureau should find that they meet the extension criteria as discussed in the *Wireless Construction PN*. See *Wireless Construction PN* at 2-3.

<sup>29</sup> See, e.g., Order, *Utilities Telecom Council and Winchester Cator, LLC, Petition for Rulemaking to Establish Rules Governing Critical Infrastructure Industry Fixed Service Operations in the 14.0-14.5 GHz Band*, 28 FCC Rcd 7051, ¶ 11 (2013).

<sup>30</sup> See, e.g., *AT&T WCS Waiver Order* (granting AT&T relief from and extending the compliance period for WCS performance requirements in order to allow it to provide services to utilities for the deployment of smart grid applications).

able to demonstrate substantial service, as required for license renewal, no later than December 31, 2022.<sup>31</sup>

Under FE's deployment plan, by the Licenses' current renewal date of June 13, 2019, FELHC estimates that **an estimated 2.7 million people** (20% of the total population in the counties in the Licensed Areas) will be served by its 700 MHz equipment. And by the end of 2022, FE expects that it will have deployed its new communications network utilizing the Upper 700 MHz A Block across the entire licensed footprint, meeting an essential societal need – reliable electric service – for millions of people in Ohio, Pennsylvania, New Jersey, West Virginia, and Maryland. As reflected in Exhibit B, FE projects that this deployment will reach electrical equipment serving approximately two-thirds (67%) of the population in the Licensed Areas and licensed counties across its footprint, or **more than 8.9 million people**, which is well in excess of the 50% population coverage safe harbor applicable to the Upper 700 MHz A Block. Based on FE's preliminary deployment plan, more than 2,000 radios will be deployed by that time.

Because FE acquired the Licenses specifically to cover its service territory, FE expects that at least one fixed device will be operating within each county authorized under the Licenses by December 31, 2022. This would also meet the Commission's rural safe harbor for

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<sup>31</sup> The Parties note that FE's deployment plan and its resulting population coverage proxy represent just one approach to meeting the Upper 700 MHz A Block substantial service requirements. As indicated at note 20 *supra*, in addition to the 50% population coverage safe harbor, Upper 700 MHz A Block licensees may satisfy the construction requirements by meeting the spectrum leasing population coverage safe harbor or through other operational activity that meets the Commission's flexible Section 27.14(a) standard. 47 C.F.R. § 27.14(a).

substantial service (*i.e.*, at least one endpoint of a fixed link in 20% of the rural counties in the licensed area),<sup>32</sup> to the extent applicable to the type of services it will be deploying.

Moreover, these deployments represent just the beginning of FE's implementation of operations in this spectrum. Additional deployments of existing communications, as well as many potential new applications, are expected to provide further coverage and value to the population within the served counties in subsequent years, thereby extending the public interest benefits. For all the foregoing reasons, this outcome is undeniably in the public interest.

**C. The Bureau Should Clarify that FELHC May Use a Device-Based Coverage Proxy to Show Compliance with the Safe Harbor as of December 31, 2022**

The Parties urge the Bureau to clarify that, in demonstrating substantial service (including through compliance with the Upper 700 MHz A Block safe harbor), FELHC may use the coverage of devices used for communicating with electrical assets as a reasonable proxy for calculating coverage to the population in the License Areas.

Earlier this year in the *AT&T WCS Waiver Order*, the Mobility Division recognized that in the utility context, hybrid or non-traditional operations involving activities such as smart grid to monitoring stations, maintenance instrumentation, automatic metering, collection points, and video surveillance, may not easily lend themselves to the application of strict population-based measures and may require guidance from the Bureau.<sup>33</sup> While the Division in that order was examining the application of quantitative performance requirements that were tied to

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<sup>32</sup> See *Rural Report and Order*, ¶ 79.

<sup>33</sup> *AT&T WCS Waiver Order*, ¶ 5. In this order, the Division relied on the Commission's 2012 WCS Order on Reconsideration. *Order on Reconsideration, Amendment of Part 27 of the Commission's Rule to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band et al.*, 27 FCC Rcd 13651 (2012).

population-based coverage or fixed-link benchmarks, the issue here is the same: how does a licensee apply a population-based coverage benchmark (here, in conjunction with a safe harbor) in a situation where consumers are not directly served by the network and the services deployed are a mix of fundamentally different types of uses. As the Commission recognized in the *700 MHz Guard Band Second Report and Order*,<sup>34</sup> the threshold for substantial service should be based on the market and type of spectrum users served, with showings reviewed on a case-by-case basis.

Importantly, the *AT&T WCS Waiver Order* provides significant support for a Bureau finding here that a device-based coverage proxy is appropriate to apply to FELHC's seven-year deployment plan across its entire service territory.<sup>35</sup> The Division recognized there that the unique nature of utility-related offerings, which include elements of both point-to-multipoint and point-to-point systems, do not lend themselves to strict application of a substantial service metric based on population covered. The Division instead opted for a population proxy based on service provided to major utilities for smart grid offerings.

Following the principles of the *AT&T WCS Waiver Order* and the flexible approach established by the Commission for the Upper 700 MHz A Block, the Bureau should find that strict application of a substantial service metric based on population covered is not warranted here. Instead, due to the nature of FE's utility service offering, the Bureau should clarify that coverage of devices used for communicating with electrical assets can be used as a reasonable proxy for calculating population coverage and demonstrating substantial service. In Exhibit B

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<sup>34</sup> *700 MHz Guard Band Second Report and Order*, ¶ 78.

<sup>35</sup> As noted, FE's proposed population coverage proxy represents just one of a myriad approaches to meeting the Upper 700 MHz A Block substantial service requirements under the Commission's flexible approach to showing substantial service.

hereto, FELHC provides the methodology and assumptions that it proposes to follow for translating 700 MHz device deployments to population served. The Bureau should confirm that in demonstrating substantial service as of December 31, 2022, or such other date as determined by the Bureau, FELHC may apply the methodology set forth in Exhibit B for translating device deployments to population coverage.

**V. Conclusion**

FELHC has proactively invested in spectrum on the secondary market to address its need to transition its wireless and copper services. The Parties urge the Bureau to grant FELHC an extension of time or waiver to demonstrate substantial service by December 31, 2022, and should clarify that FELHC may use the coverage of connected devices as a proxy for population coverage to show substantial service, as reflected in Exhibit B hereto. The requested extension of time or waiver and the requested clarification of the application of the substantial service requirement are warranted and in the public interest.

Respectfully submitted,

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Dated: June 29, 2017

**EXHIBIT A  
LICENSES AND LICENSE AREAS**

<b>Call Sign WPRV447</b>			
Market	State	County	Spectrum Rights
MEA003	Pennsylvania	McKean	2018
	Pennsylvania	Potter	2018
<b>Call Sign WPRR329</b>			
Market	State	County	Spectrum Rights
MEA005	Maryland	Allegany	2018
	Maryland	Frederick	2018
	Maryland	Garrett	2018
	Maryland	Washington	2018
	Pennsylvania	Franklin	2018
	Pennsylvania	Fulton	2018
	West Virginia	Berkeley	2018
	West Virginia	Grant	2018
	West Virginia	Hampshire	2018
	West Virginia	Hardy	2018
	West Virginia	Jefferson	2018
	West Virginia	Mineral	2018
	West Virginia	Morgan	2018
	West Virginia	Randolph	2018
	West Virginia	Tucker	2018
<b>Call Sign WPRR299</b>			
Market	State	County	Spectrum Rights

MEA002	Pennsylvania	Bradford	2018
	New Jersey	Monmouth	2018
	Pennsylvania	Monroe	2018
	New Jersey	Ocean	2018
	Pennsylvania	Pike	2018
	Pennsylvania	Sullivan	2018
	Pennsylvania	Susquehanna	2018
	Pennsylvania	Tioga	2018
	Pennsylvania	Wyoming	2018
<b>Call Sign WPRR300</b>			
Market	State	County	Spectrum Rights
MEA004	Pennsylvania	Adams	2018
	Pennsylvania	Lebanon	2018
	Pennsylvania	York	2018
<b>Call Sign WPRR301</b>			
Market	State	County	Spectrum Rights
MEA006	West Virginia	Greenbrier	2018
	West Virginia	Monroe	2018
	West Virginia	Pendleton	2018
	West Virginia	Pocahontas	2018
<b>Call Sign WPSK920</b>			
Market	State	County	Spectrum Rights
MEA012	Pennsylvania	Armstrong	2018
	Pennsylvania	Bedford	2018

	Pennsylvania	Blair	2018
	Pennsylvania	Butler	2018
	Pennsylvania	Cambria	2018
	Pennsylvania	Cameron	2018
	Pennsylvania	Centre	2018
	Pennsylvania	Clearfield	2018
	Pennsylvania	Elk	2018
	Pennsylvania	Fayette	2018
	Pennsylvania	Greene	2018
	Pennsylvania	Huntingdon	2018
	Pennsylvania	Indiana	2018
	Pennsylvania	Jefferson	2018
	Pennsylvania	Lawrence	2018
	Pennsylvania	Mifflin	2018
	Pennsylvania	Somerset	2018
	Pennsylvania	Washington	2018
	Pennsylvania	Westmoreland	2018
	West Virginia	Barbour	2018
	West Virginia	Brooke	2018
	West Virginia	Doddridge	2018
	West Virginia	Hancock	2018
	West Virginia	Harrison	2018
	West Virginia	Lewis	2018
	West Virginia	Marion	2018
	West Virginia	Monongalia	2018
	West Virginia	Preston	2018
	West Virginia	Taylor	2018
	West Virginia	Tyler	2018

	West Virginia	Upshur	2018
	West Virginia	Wetzel	2018
<b>Call Sign WPRR305</b>			
Market	State	County	Spectrum Rights
MEA013	West Virginia	Braxton	2018
	West Virginia	Calhoun	2018
	West Virginia	Clay	2018
	West Virginia	Gilmer	2018
	West Virginia	Nicholas	2018
	West Virginia	Pleasants	2018
	West Virginia	Ritchie	2018
	West Virginia	Roane	2018
	West Virginia	Summers	2018
	West Virginia	Webster	2018
	West Virginia	Wirt	2018
	West Virginia	Wood	2018
<b>Call Sign WPRR306</b>			
Market	State	County	Spectrum Rights
MEA014	Ohio	Morrow	2018
	Ohio	Madison	2018
<b>Call Sign WPRR307</b>			
Market	State	County	Spectrum Rights
MEA015	Ohio	Columbiana	2018
	Ohio	Erie	2018

	Ohio	Huron	2018
	Pennsylvania	Clarion	2018
	Pennsylvania	Crawford	2018
	Pennsylvania	Forest	2018
	Pennsylvania	Venango	2018
	Pennsylvania	Warren	2018
<b>Call Sign WPRR308</b>			
Market	State	County	Spectrum Rights
MEA016	Ohio	Defiance	2018
	Ohio	Fulton	2018
	Ohio	Henry	2018
	Ohio	Williams	2018
<b>Call Sign WQZE442</b>			
Market	State	County	Spectrum Rights
MEA016	Ohio	Lucas	2017
	Ohio	Ottawa	2017
	Ohio	Sandusky	2017
	Ohio	Wood	2017
<b>Call Sign WQZE441</b>			
Market	State	County	Spectrum Rights
MEA015	Ohio	Ashland	2017
	Ohio	Ashtabula	2017
	Ohio	Cuyahoga	2017
	Ohio	Geauga	2017

	Ohio	Lake	2017
	Ohio	Lorain	2017
	Ohio	Mahoning	2017
	Ohio	Medina	2017
	Ohio	Portage	2017
	Ohio	Richland	2017
	Ohio	Stark	2017
	Ohio	Summit	2017
	Ohio	Trumbull	2017
	Pennsylvania	Erie	2017
	Pennsylvania	Mercer	2017
<b>Call Sign WQZE440</b>			
Market	State	County	Spectrum Rights
MEA014	Ohio	Marion	2017
<b>Call Sign WQZE439</b>			
Market	State	County	Spectrum Rights
MEA013	Ohio	Clark	2017
<b>Call Sign WQZE438</b>			
Market	State	County	Spectrum Rights
MEA004	Pennsylvania	Berks	2017
<b>Call Sign WQZE437</b>			
Market	State	County	Spectrum Rights
MEA002	New Jersey	Hunterdon	2017

	New Jersey	Morris	2017
	Pennsylvania	Northampton	2017
	New Jersey	Sussex	2017
	New Jersey	Warren	2017

## EXHIBIT B

### **Translating 700 MHz Device Deployments to Population Served Methodology & Assumptions**

#### **A. Overview of Device Deployments**

Electricity is a vital service necessary for virtually all aspects of life in a modern society. The 700 MHz radios are being deployed within FE's Operating Companies primarily for the monitoring and control of high voltage electrical equipment that serves industrial, commercial, and residential customers.

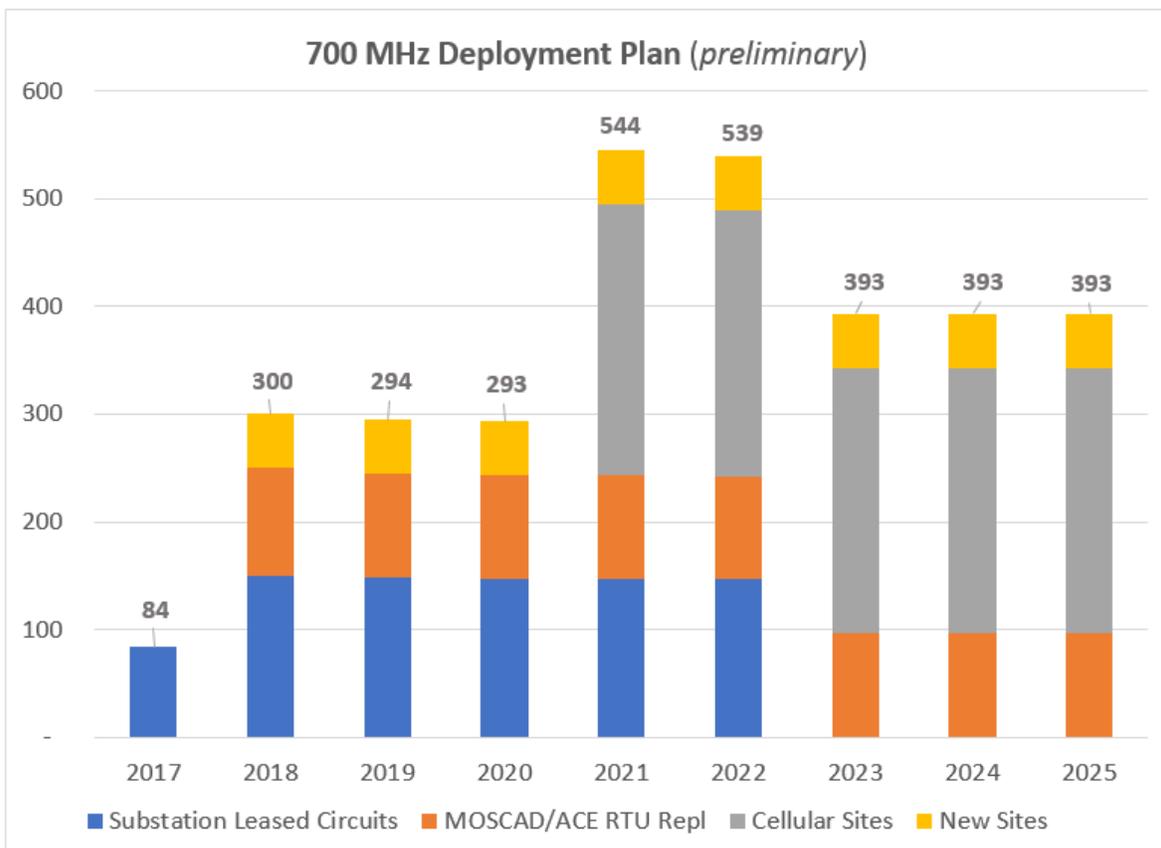
FE will be licensed for use of the 700 MHz A Block in a total of 118 counties partitioned from ten MEAs in Ohio, Pennsylvania, New Jersey, West Virginia, and Maryland. In each of these counties, FE knows the number of FE customers, as well as the total population. The ratio of population to FE customers was used to translate the impact of 700 MHz device deployments and estimate the population that will be served by (and thus benefit from) the reliability improvements delivered by this equipment.

In the primary use case, 700 MHz radios will be deployed at transmission substations, at distribution substations, at transmission line switches, and on distribution line equipment. Several in-progress and planned projects will replace existing communications methods, such as leased circuits, Motorola Supervisory Control and Data Acquisition (MOSCAD) radios, and cellular radios. For substations, a 70% penetration was assumed (i.e., 7 of 10 existing sites will be candidates for replacement by 700 MHz radios). For existing MOSCAD and cellular radios, an

80% penetration was assumed.<sup>36</sup> Also, an estimated 50 new sites per year are expected to communicate via 700 MHz frequencies as part of normal system growth (e.g., new substations, expansion of line switching, etc.).

### B. 700 MHz Deployment Plan

The total annual 700 MHz radio deployments expected as part of these projects are summarized below.



This deployment plan is based on the best information currently available regarding in-progress and planned projects. The yearly totals may change based on a variety of factors,

<sup>36</sup> These penetration rates were based on device locations, terrain, and average expected range and prior wireless communications deployments by the FE engineering team. These same penetration rates were also used as the basis for FE's budgetary planning.

including (but not limited to) weather delays, design considerations, results of propagation studies, regulatory approvals, etc.

### **C. Calculating Population Served**

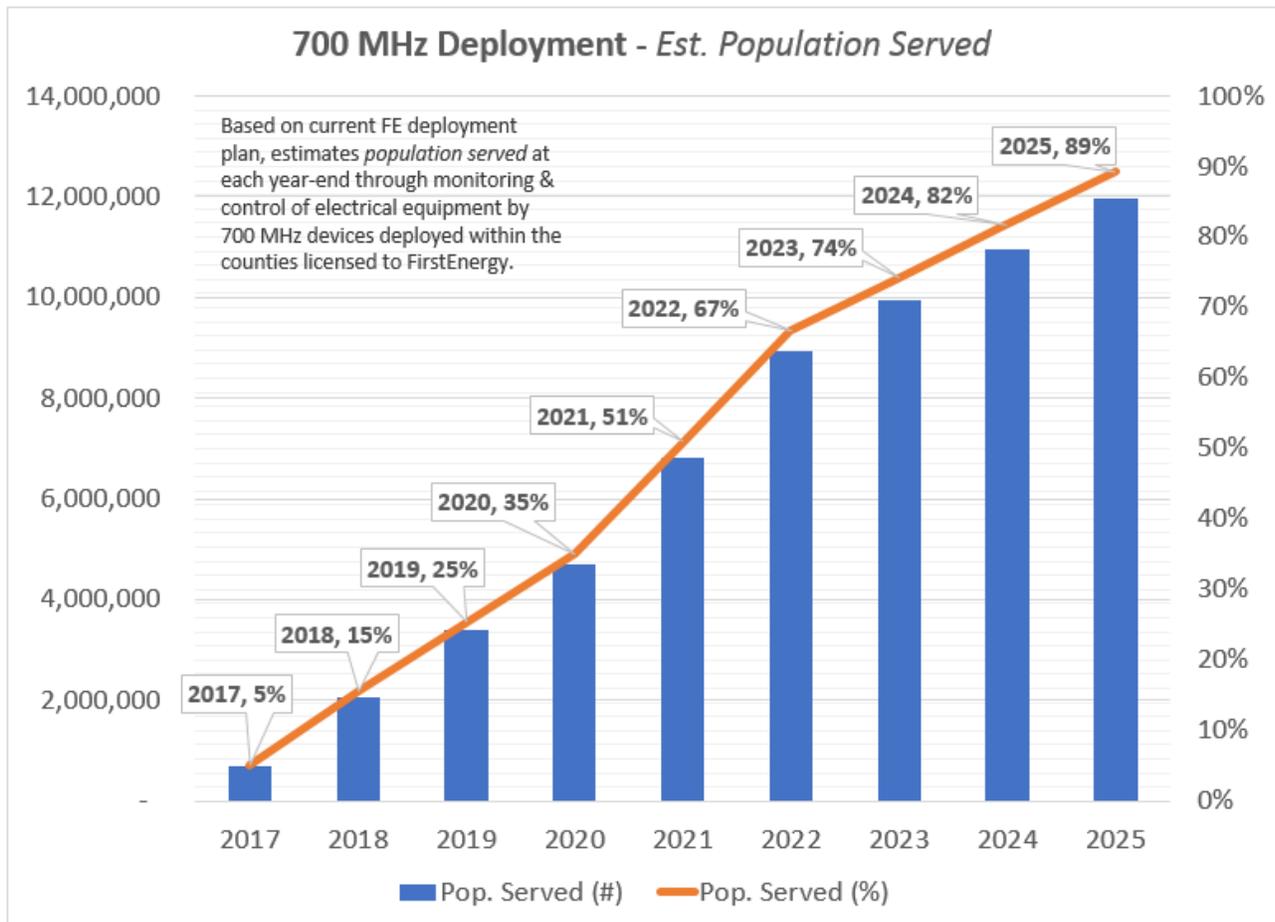
Based on this preliminary deployment plan, an average customer count for transmission substations, distribution substations, and distribution feeders was calculated using total substation, circuit, and customer counts from the FE Outage Management System. In each case, the assumed number of affected customers was adjusted downward to reflect the hierarchical nature of the transmission and distribution electric system (i.e., to avoid overlap, since transmission equipment is "upstream" from distribution equipment).

The following adjusted numbers were used in FELHC's assumptions for affected customers:

Tx substations & line equipment (small to medium) = 4,050 avg. customers per device  
Dx substations (adjusted) = 1,350 avg. customers per device  
Dx feeders (adjusted) = 142 avg. customers per device

These values, along with the ratios of population to FE customers in each county, were used to calculate the estimated population served at each year-end through monitoring and control of electrical equipment by 700 MHz devices deployed within the counties licensed to FE.

The total cumulative estimate of "population served" based on the 700 MHz deployment schedule is summarized below:



The current renewal date for the 700 MHz licenses is June 13, 2019. Based on the foregoing methodology, at that point in the deployment schedule, FELHC estimates that an estimated **2.7 million people** (20% of the total population in the counties in the Licensed Areas) will be served by the 700 MHz equipment. By December 31, 2022 – which is the extension of the license renewal requested by FE – FELHC estimates that that more than **8.9 million people** (67% of the total population in the counties in the Licensed Areas) will be served by the 700 MHz equipment.

Based on the preliminary deployment plan, more than 2,000 radios will be deployed by that time. Because FE acquired the Licenses specifically to cover its service territory, FE expects that at least one fixed device will be operating within each county authorized under the

Licenses by December 31, 2022. This would also meet the Commission's rural safe harbor for substantial service (*i.e.*, at least one endpoint of a fixed link in 20% of the rural counties in the licensed area).<sup>37</sup> Additional deployments of existing communications, as well as many potential new applications, are expected to provide further coverage and value to the population within the served counties in subsequent years, thereby extending the resulting public interest benefits.

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<sup>37</sup> See Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies to Provide Spectrum-Based Services, WT Docket No. 02-381, *Report and Order and Further Notice of Proposed Rule Making*, 19 FCC Rcd 19078, 19123 ¶ 79 (2004).