

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of
Expanding the Economic and Innovation
Opportunities of Spectrum Through Incentive
Auctions
GN Docket No. 12-268

REPORT AND ORDER

Adopted: October 21, 2015

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By the Commission:

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I. INTRODUCTION

1. In the Incentive Auction R&O, the Commission adopted transition rules that permit low power television and TV translator ("LPTV") stations, fixed broadcast auxiliary service operations ("BAS"), and unlicensed white space devices (hereinafter, collectively, "secondary and unlicensed users") to continue operating in the 600 MHz Band, under specified conditions, after the spectrum has been licensed to new 600 MHz Band wireless licensees. The secondary and unlicensed users must vacate the band once the wireless licensee "commences operations" in its licensed 600 MHz spectrum, or on a date certain. By this Report and Order, the Commission defines when and in what areas 600 MHz Band

1 See generally Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket No. 12-268, Report and Order, 29 FCC Rcd 6567, 6833-47, paras. 655-88 (2014) (Incentive Auction R&O).

2 See id. This Report and Order only addresses the requirements relating to secondary and unlicensed users vacating the 600 MHz Band where 600 MHz Band wireless licensees commence operations. We note that secondary and unlicensed users also may be required to vacate portions of the 600 MHz Band to the extent the auction system assigns a television station to a channel in the 600 MHz Band. See Broadcast Incentive Auction Scheduled to Begin March 29, 2016; Procedures for Competitive Bidding in Auction 1000, Including Initial Clearing Target

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wireless licensees will be deemed to “commence operations” for the purpose of establishing when the secondary and unlicensed users must cease operations and vacate the 600 MHz Band in those areas. Specifically, as discussed below, we establish that a 600 MHz Band wireless licensee commences operations when it conducts site commissioning tests. We also create a limited exception to this rule to permit 600 MHz Band wireless licensees to conduct first field application testing in advance of site commissioning tests under certain circumstances.

## II. BACKGROUND

2. In the *Incentive Auction R&O*, the Commission adopted rules to implement the broadcast television spectrum incentive auction as mandated by Congress in the Middle Class Tax Relief and Job Creation Act.<sup>3</sup> The Commission also crafted rules to govern the transition of the incumbent users, including secondary and unlicensed users, out of the 600 MHz Band.<sup>4</sup> The Commission implemented a transition process that promotes ready access to the repurposed spectrum by 600 MHz Band wireless licensees when and where they need it, while at the same time providing for an orderly transition process for incumbent broadcasters and secondary and unlicensed users that currently serve various important consumer needs.<sup>5</sup>

3. Under the transition rules addressed in this Report and Order, LPTV stations in the 600 MHz Band may continue to operate, except in the guard bands, unless they are in an area in which a 600 MHz Band wireless licensee provides advance written notice that it intends to commence operations and that the LPTV station is likely to cause harmful interference to the 600 MHz Band wireless licensee’s operations in that area.<sup>6</sup> LPTV stations in the 600 MHz guard bands (including the duplex gap) must cease operations no later than the end of the 39-month Post-Auction Transition Period.<sup>7</sup> White space

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*Determination, Qualifying to Bid, and Bidding in Auctions 1001 (Reverse) and 1002 (Forward)*, AU Docket No. 14-252, Public Notice, FCC 15-78 at para. 25 (rel. Aug. 11, 2015).

<sup>3</sup> *Incentive Auction R&O*, 29 FCC Rcd at 6569, para. 1; see also Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, §§ 6402 (codified at 47 U.S.C. § 309(j)(8)(G)), 6403 (codified at 47 U.S.C. § 1452), 126 Stat. 156 (2012) (Spectrum Act).

<sup>4</sup> See generally *Incentive Auction R&O*, 29 FCC Rcd at 6833-47, paras. 655-88.

<sup>5</sup> See *id.* at 6834, para. 655. The 600 MHz Band wireless licensees will not have access to the repurposed spectrum during the Post-Auction Transition Period unless full power and Class A television operations have ceased operations in their licensed area. See *id.* at 6573, 6801-02, 6833-34 paras. 11, 573, 655. The “Post-Auction Transition Period” consists of a 39-month period following the issuance of the *Channel Reassignment PN* that will announce the results of the auction and repacking process. See *id.* at 6782, 6796, paras. 525, 559-60; 47 C.F.R. § 27.4. If television stations are assigned channels in the 600 MHz Band, unlicensed users may be required to cease operating in these frequencies before a 600 MHz Band wireless licensee commences operations. See *supra* note 2.

<sup>6</sup> See generally *Incentive Auction R&O*, 29 FCC Rcd at 6834-41, paras. 656-72; 47 C.F.R. § 73.3700(g)(4). The 600 MHz Band wireless licensee must give LPTV stations that are likely to cause harmful interference written notice to cease operations at least 120 days prior to the date the wireless licensee intends to commence operations. *Incentive Auction R&O*, 29 FCC Rcd at 6839-6841, paras. 668-71; 47 C.F.R. § 73.3700(g)(4)(ii)(C). The 600 MHz Band wireless licensees will be required to determine whether a likelihood of receiving harmful interference exists based on the methodology the Commission adopted to prevent inter-service interference. *Incentive Auction R&O*, 29 FCC Rcd at 6840, para. 668 n.1862; see also *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Third Report and Order and First Order on Reconsideration, FCC 15-141 at paras. 49-52 (adopted October 21, 2015). To the extent that the 600 MHz Band wireless licensees are commencing operations in areas of their geographic licenses where harmful interference from LPTV stations would not be likely, these LPTV stations are not required to cease operations. *Incentive Auction R&O*, 29 FCC Rcd at 6840, para. 668 n.1863; 47 C.F.R. § 73.3700(g)(4)(iii).

<sup>7</sup> *Incentive Auction R&O*, 29 FCC Rcd at 6841, para. 672; 47 C.F.R. § 73.3700(g)(4)(v). LPTV stations in the guard bands will be required to cease operating prior to that date if any 600 MHz Band licensee notifies them that their

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devices may continue to operate in the 600 MHz Band, except in those areas in which a 600 MHz Band wireless licensee commences operations and provides the requisite notice to a white space database administrator.<sup>8</sup> BAS licensees must vacate the 600 MHz Band by the end of the Post-Auction Transition Period, or earlier if notified by a 600 MHz Band wireless licensee that it intends to commence operations and that the BAS licensee is likely to cause harmful interference.<sup>9</sup> The Commission did not define the term “commence operations,” but stated that it would do so as part of the pre-auction process.<sup>10</sup>

4. On March 26, 2015, we issued the *Commencing Operations PN* and sought comment on the appropriate definition of “commence operations” in light of the Commission’s objective to orderly transition secondary and unlicensed users out of the 600 MHz Band.<sup>11</sup> Specifically, we proposed that a 600 MHz Band wireless licensee be deemed to “commence operations” on its licensed spectrum when it begins site activation and commissioning tests prior to launching actual commercial service.<sup>12</sup> In the alternative, we asked whether “any testing” by a wireless licensee could be deemed to constitute the commencement of operations, or whether there was a stage other than site commissioning testing that could be an appropriate benchmark for determining when commencement of operations occurs.<sup>13</sup>

5. The *Commencing Operations PN* also proposed that a 600 MHz Band licensee’s notice of intent to commence operations would cover the area served by its commercial service infrastructure deployment.<sup>14</sup> We noted that under this approach, the area subject to notification might include an entire metropolitan area, in the case of the initial launch for a market, or it might be a smaller area, such as a highway corridor, where a licensee is deploying commercial service in phases.<sup>15</sup> Furthermore, we proposed that a 600 MHz Band licensee would be authorized to conduct site commissioning tests on all cell sites within this area subject to notification starting on the date provided in its notice.<sup>16</sup> As an alternative to our proposal, we also sought comment on whether the area subject to a wireless licensee’s

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operations would likely cause harmful interference in an area where the wireless licensee intends to commence operations. *Incentive Auction R&O*, 29 FCC Rcd at 6841, para. 672; 47 C.F.R. § 73.3700(g)(4)(v).

<sup>8</sup> *Incentive Auction R&O*, 29 FCC Rcd at 6843-44, para. 680; 47 C.F.R. § 15.707(a)(5). The 600 MHz Band wireless licensee can notify any of the white space database administrators when and where it plans to commence operations, and the white space databases would be updated to preclude unlicensed white space device operations when the licensee commences operations in those areas. *Incentive Auction R&O*, 29 FCC Rcd at 6844, para. 680; 47 C.F.R. § 27.1320. The Commission recently revised various procedures concerning operation of the white space databases, including addressing how the databases can be designed to identify a specified geographic area that corresponds to the area where the 600 MHz Band wireless licensee has commenced operations. See *Amendment of Part 15 of the Commission’s Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37*, ET Docket No. 14-165, Report and Order, FCC 15-99 at paras. 238-244 (rel. Aug. 11, 2015) (*Part 15 Report and Order*).

<sup>9</sup> *Incentive Auction R&O*, 29 FCC Rcd at 6841-42, paras. 673-76; 47 C.F.R. § 74.602(h)(5). The 600 MHz Band wireless licensee must provide at least 30 days’ advance notice to a BAS operator. *Incentive Auction R&O*, 29 FCC Rcd at 6841-42, para. 674; 47 C.F.R. § 74.602(h)(5)(ii)(A)(2).

<sup>10</sup> *Incentive Auction R&O*, 29 FCC Rcd at 6840, para. 668 n.1861.

<sup>11</sup> *Comment Sought on Defining Commencement of Operations in the 600 MHz Band*, GN Docket No. 12-268, Public Notice, 30 FCC Rcd 3200, paras. 1-2 (2015) (*Commencing Operations PN*).

<sup>12</sup> *Id.* at 3202-03, para. 5.

<sup>13</sup> *Id.* at 3203, para. 5.

<sup>14</sup> *Id.* at 3203, para. 6.

<sup>15</sup> *Id.* at 3203, para. 6.

<sup>16</sup> *Id.* at 3203, para. 6.

notification should cover larger areas to encompass the licensee's phased deployment of infrastructure.<sup>17</sup>

6. In response to the *Commencing Operations PN*, 16 parties filed comments and/or reply comments, the majority of whom generally support our proposal.<sup>18</sup> Initially, several wireless entities opposed our proposal and offered alternatives that differed significantly with respect to the timing and/or scope of how to define "commencing operations."<sup>19</sup> Thereafter, CTIA suggested "a compromise" in which the Commission would adopt its proposed definition of commencing operations but allow wireless operators to conduct what CTIA termed market testing in limited markets and geographic areas prior to commencing operations.<sup>20</sup> AT&T subsequently responded to Commission staff inquiries about how AT&T conducts market testing, which AT&T terms first field application testing.<sup>21</sup>

### III. DISCUSSION

7. Based on our review of the record and as explained below in greater detail, we determine that a 600 MHz Band wireless licensee "commences operations" when it conducts site commissioning tests. In this context, we define that term to include site activation and commissioning tests using permanent base station equipment, antennas and/or tower locations as part of its site and system optimization in the area of its planned commercial service infrastructure deployment.<sup>22</sup> It is at this juncture that a wireless licensee moves from construction to testing its system, and needs unfettered

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<sup>17</sup> *Id.* at 3203, para. 6.

<sup>18</sup> See, e.g., Letter from H Nwana, Executive Director, Dynamic Spectrum Alliance, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 at 1 (filed April 30, 2015) ("DSA supports the Commission's proposal and believes it advances the Commission's transition objectives.") (*DSA Commencing Operations Comments*); Reply Comments of Google Inc. at 4 (filed May 18, 2015) ("the Commission should expeditiously proceed with this balanced approach") (*Google Commencing Operations Reply Comments*); Letter from Paula Boyd, Director, Government and Regulatory Affairs, Microsoft to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 at 1 (filed May 1, 2015) ("Microsoft supports the Commission's proposal") (*Microsoft Commencing Operations Comments*); Comments of the National Association of Broadcasters at 4 (filed May 1, 2015) ("NAB supports the Commission's proposals for the commencement of operations that will trigger displacement in a given area") (*NAB Commencing Operations Comments*); Reply Comments of Open Technology Institute at New America and Public Knowledge at 19 (filed May 18, 2015) ("OTI and PK commend and support the Commission's efforts to ensure that unused 600 MHz spectrum can be put to use for broadband services to the greatest possible extent, rather than lie fallow during the period between the auction and the commencement of service by new licensees in the band.") (*OTI and PK Commencing Operations Reply Comments*); Reply Comments of the Public Broadcasting Service, Association of Public Television Stations, and Corporation for Public Broadcasting at 2 (filed May 18, 2015) ("the Commission should adopt its proposals") (*PTV Commencing Operations Reply Comments*); Reply Comments of Shure Incorporated at 6-7 (filed May 18, 2015) ("Shure generally agrees with the Commission's proposed definition of 'commencement of services'") (*Shure Commencing Operations Reply Comments*); Comments of the Wireless Internet Service Providers Association at 7 (filed May 1, 2015) ("WISPA urges the Commission to adopt the definition of 'commencement of operations' described in the *Public Notice*, as augmented by the refinements described" in WISPA's comments) (*WISPA Commencing Operations Comments*).

<sup>19</sup> See, e.g., Comments of AT&T at 10 (filed May 1, 2015) (*AT&T Commencing Operations Comments*); Reply Comments of Competitive Carriers Association at 1-2 (filed May 18, 2015) (*CCA Commencing Operations Reply Comments*); Comments of CTIA – The Wireless Association at 1 (filed May 1, 2015) (*CTIA Commencing Operations Comments*).

<sup>20</sup> Letter of Scott K. Bergmann, Vice President, Regulatory Affairs, CTIA to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 at 1 (filed Sept. 9, 2015) (*CTIA Sept 9, 2015 ex parte*).

<sup>21</sup> Letter of Michael P. Goggin, Counsel, AT&T to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268, AU Docket 14-252 at 1 (filed Sept. 21, 2015) (*AT&T Sept 21, 2015 ex parte*).

<sup>22</sup> Site activation and commissioning occurs when a base station is first put into operational use. A more detailed description of the tests involved is provided in CCA's Reply Comments. See *CCA Commencing Operations Reply Comments* at 2-4.

access to its licensed spectrum to optimize its network in advance of launching commercial service to customers. In addition, we adopt the proposal in the *Commencing Operations PN* that a licensee's notification of commencement will cover the area served by its commercial service infrastructure deployment.<sup>23</sup> We also create a limited exception to these rules to permit 600 MHz Band wireless licensees to conduct first field application testing in advance of site commissioning testing, under certain circumstances. Our decision balances the policy goal of providing an orderly transition process for secondary and unlicensed users in the band with that of providing 600 MHz Band wireless licensees with exclusive access to their spectrum as soon as they are ready to deploy wireless service in the band.

**A. Defining the Timing of Commencing Operations**

8. Many months of preparatory work go into planning and deploying a wireless broadband system. As noted by wireless industry commenters, they must engage in extensive construction and testing of equipment and service before licensees can launch commercial service in a particular market.<sup>24</sup> When a wireless licensee establishes permanent base stations, with permanent antennas, and/or tower locations, the licensee will need access to its licensed spectrum to perform site activation and commissioning tests to ensure that the base station performs as expected.<sup>25</sup> The licensee must “analyze multiple factors, including but not limited to signal generation, power measurement, frequency error, unwanted emissions, occupied bandwidth, adjacent-channel leakage, and spurious emissions” as part of this testing.<sup>26</sup> In sum, the start of the site commissioning testing phase requires the use of licensed frequencies for committed sites in anticipation of bringing up a wireless broadband system in an area. Therefore, we find that a 600 MHz Band wireless licensee “commences operations” when it begins its site commissioning tests.

9. As many commenters point out, choosing site commissioning testing as the benchmark for defining commencement of operations provides a relevant and sustainable sign that 600 MHz Band wireless licensees are committed to deploying service in a particular area and will begin providing commercial service in the immediate term.<sup>27</sup> Furthermore, it will minimize, to the extent possible, the time between cessation of secondary and unlicensed use and initiation of commercial wireless service.<sup>28</sup> This takes the interests of secondary and unlicensed users into account but still provides uncompromised

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<sup>23</sup> See *Commencing Operations PN*, 30 FCC Rcd at 3203, para. 6.

<sup>24</sup> *AT&T Commencing Operations Comments* at 8 (citing January 2013 *CTIA Comments* in Dkt. 12-268, at 40); see also *CCA Reply Comments* at 2.

<sup>25</sup> See *Commencing Operations PN*, 30 FCC Rcd at 3202-03, para. 5.

<sup>26</sup> See *CCA Commencing Operations Reply Comments* at 2. As described by CCA, site commissioning and activation tests are the start of an extensive testing process that prepares the network for operation. In addition to the tests mentioned above, testing includes drive testing of individual sites, cluster optimization testing, and drive tests among multiple clusters. See *id.* at 2-3. The time to complete this process varies depending upon the licensee's business plans as well as local market factors. As CCA notes, “the process of bringing up . . . a cluster of sites . . . for a given location requires approximately three to four months of testing across a license area that, depending on the PEA, could cover a large and diverse geographic area.” *Id.* at 3.

<sup>27</sup> See, e.g., *Google Commencing Operations Reply Comments* at 2-3; *NAB Commencing Operations Comments* at 2; *Microsoft Commencing Operations Comments* at 2. PTV notes that as a practical matter, until a carrier begins site commissioning tests, there is no primary-service operation a secondary user must protect, and thus no need for secondary users to abandon operations. *PTV Commencing Operations Reply Comments* at 4-5.

<sup>28</sup> Many commenters argue that the spectrum should not lay fallow. See, e.g., *DSA Commencing Operations Comments* at 1; Comments of Google Inc. at 2-3 (filed May 1, 2015) (*Google Commencing Operations Comments*); *NAB Commencing Operations Comments* at 2; *OTI and PK Commencing Operations Reply Comments* at 5; *PTV Commencing Operations Reply Comments* at 3; *Shure Commencing Operations Reply Comments* at 6-7; *WISPA Commencing Operations Reply Comments* at 6.

access to the 600 MHz Band by wireless licensees when they need it.<sup>29</sup> Accordingly, we find that our proposed definition of “commencing operations” appropriately balances the competing interests we must consider in transitioning the 600 MHz Band to wireless use.<sup>30</sup>

10. We decline to adopt AT&T, CTIA and CCA’s proposal to define commencement of operations in the 600 MHz Band to include the early stages of pre-deployment. These commenters propose that secondary and unlicensed users should clear the 600 MHz Band as early as the initial transmission of a radio frequency (“RF”) signal by a wireless licensee under its 600 MHz Band license.<sup>31</sup> In support, CTIA and CCA argue that early pre-deployment testing of equipment and services would be best run in actual operating conditions (*i.e.*, without the presence of secondary users) on the wireless carrier’s licensed frequencies.<sup>32</sup> CTIA also opines that if licensees must commit to permanent base station equipment and permanent antenna locations as a prerequisite to commencing operations, carriers will be required to make “critical investments before they are able to ascertain their needs.”<sup>33</sup> CTIA argues that the unique deployment challenges (such as the presence of broadcast television stations in some areas) for wireless licensees in the 600 MHz Band also justify removal of secondary and unlicensed signals from a licensed area as quickly as possible.<sup>34</sup>

11. Permitting wireless carriers to displace incumbent secondary and unlicensed users at the first RF transmission or in the earliest stages of pre-deployment would be inconsistent with the balancing of interests we established as part of the transition plan for the 600 MHz Band.<sup>35</sup> We agree that 600 MHz Band wireless licensees require actual fully modulated waveforms at full operational power, on their specific licensed frequencies, when they are ready to test specific functionality (such as handover and out of band emissions), adjust site coverage, and minimize interference between sites. This requirement is the basis for our definition of commence operations. Other tests that occur earlier in the deployment process, however, such as drive testing for site evaluation and propagation model calibration, typically do not require use of the licensee’s specific licensed frequencies to produce accurate results. For example, if an LPTV station is located within an anticipated coverage area, a 600 MHz Band wireless licensee can perform these early pre-deployment tests on adjacent or nearby channels, or possibly using narrowband signals on the channel edge, without receiving interference.

12. We also decline to adopt the proposals of WISPA and Sennheiser that commencement of

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<sup>29</sup> See, e.g., *Google Commencing Operations Comments* at 1, 3; *OTI and PK Commencing Operations Reply Comments* at 5; *PTV Commencing Operations Reply Comments* at 1-2.

<sup>30</sup> See *Commencing Operations PN*, 30 FCC Rcd at 3200, para. 2.

<sup>31</sup> See *AT&T Commencing Operations Comments* at 3 (all secondary and unlicensed users should be required to cease operations in the repurposed spectrum when a 600 MHz wireless licensee “begin[s] any radiofrequency transmissions in the 600 MHz band”); *CCA Commencing Operations Reply Comments* at 3 (“operations commence at the time of initial radiofrequency transmission by the 600 MHz Band licensee”); *CTIA Commencing Operations Comments* at 4 (“the Commission should adopt a definition of ‘commence operations’ that requires secondary users to clear the relevant 600 MHz spectrum when a wireless licensee initially transmits on its licensed spectrum”).

<sup>32</sup> See, e.g., *CTIA Commencing Operations Comments* at 7 (wireless licensees may “over-engineer” their systems to guard against non-existent interference); *CTIA Commencing Operations Reply Comments* at 5 (“If carriers’ licensed frequencies are burdened with the presence of secondary operations, it will be much more difficult for carriers to engineer and test their networks. Further, carriers will not be able to conduct this testing in a frequency environment that accurately reflects the frequency environment in which consumer devices will be operating.”); *CCA Commencing Operations Reply Comments* at 3-4 (wireless licensees will need to be able to operate tests without interference from secondary users).

<sup>33</sup> *CTIA Commencing Operations Comments* at 7. See *infra* Section III.C for a discussion of the limited exception for first field application testing.

<sup>34</sup> *CTIA Commencing Operations Comments* at 5-6.

<sup>35</sup> See *Incentive Auction R&O*, 29 FCC Rcd at 6834, para 655.

operations should be tied to the actual start of commercial service to the public.<sup>36</sup> According to WISPA, service to the public undergirds any justification for exclusivity and freedom from interference.<sup>37</sup> Defining commencement of operations to mean actual launch of commercial service by the 600 MHz Band wireless licensee, however, would ignore the scope and nature of testing necessary to bring a complex network of sites into synchronized operation to provide seamless communications that meet users' commercial service quality expectations. As discussed above, once a 600 MHz Band wireless licensee has begun construction of permanent base stations in an area, the licensee needs access to its particular licensed frequencies to accurately assess the performance of these base stations and associated user equipment in an environment free from interference. As CCA describes, "providers must conduct multiple facility tests before starting operations, which must be repeated to ensure error- and interference free deployment."<sup>38</sup> These tests are necessary for the licensee to resolve all technical issues prior to the licensed spectrum being used for commercial service. Given that such testing is essential to the provision of commercial quality service, we find that tying commencement of operations to actual launch of commercial service, as suggested by WISPA and Sennheiser, would undermine the needs of the 600 MHz Band licensees and could potentially hinder delivery of service to the public.

13. AT&T and CTIA also argue that the Spectrum Act precludes allowing secondary and unlicensed users to operate in the licensed 600 MHz Band after the spectrum is reallocated for wireless services.<sup>39</sup> We are not persuaded by these arguments. As explained in the *Incentive Auction R&O*, the Spectrum Act reinforces the Commission's established spectrum management authority,<sup>40</sup> under which we decided to allow secondary and unlicensed use of the 600 MHz Band by LPTV stations, BAS, and white space devices on a non-interfering basis for set periods of time, ending with the post-auction transition period or when 600 MHz Band wireless licensees provide the requisite notice that they intend to commence operations in areas of their geographic licenses where there is a likelihood of receiving harmful interference.<sup>41</sup> Our decision here merely finalizes the process for determining when secondary and unlicensed users need to vacate the 600 MHz Band in areas where a 600 MHz Band wireless licensee needs the spectrum.<sup>42</sup> Nothing in the transition framework we adopted in the *Incentive Auction R&O*, or

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<sup>36</sup> *WISPA Commencing Operations Comments* at 4 ("the initiation of site commissioning testing should be closely tied to the target date for the inauguration of actual licensed service to the public"); Letter from Laura A. Stefani, Counsel for Sennheiser Electric Corp. to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 at 2 (filed May 27, 2015) ("the public interest would be better served by tying commencement of service to the offering of service to the public for a fee rather than to testing"). *Accord OTI and PK Commencing Operations Reply Comments* at 5.

<sup>37</sup> See *WISPA Commencing Operations Comments* at 3-4; see also *WISPA Commencing Operations Reply Comments* at 5-7.

<sup>38</sup> *CCA Commencing Operations Reply Comments* at 3.

<sup>39</sup> See, e.g., *AT&T Commencing Operations Comments* at 6; *CTIA Commencing Operations Comments* at 8.

<sup>40</sup> *Incentive Auction R&O*, 29 FCC Rcd at 6607, para 89. Title III of the Communications Act of 1934, as amended, 47 U.S.C. §§ 301, *et seq.*, "endow[s] the Commission with expansive powers," including "broad authority to manage spectrum . . . in the public interest." *Cellco P'ship v. FCC*, 700 F.3d 534, 541, 542 (D.C. Cir. 2012) (internal quotes and citations omitted). Determinations with respect to spectrum allocation policy have long been recognized to be precisely the sort that Congress intended to leave to the broad discretion of the Commission under § 303 of the Communications Act. See *Nat'l Ass'n of Regulatory Util. Comm'rs v. FCC*, 525 F.2d 630, 635-36 (D.C. Cir. 1976) (initial allocation of spectrum for land mobile radio service). The Spectrum Act reinforces the Commission's established authority by authorizing it to "implement and enforce" the Spectrum Act's provisions (including incentive auction authority) "as if this title is a part of the Communications Act of 1934." See 47 U.S.C. § 1403(a).

<sup>41</sup> See generally *Incentive Auction R&O*, 29 FCC Rcd at 6833-47, paras. 655-88. See also *supra* para. 3.

<sup>42</sup> We decided in the *Incentive Auction R&O* to define that term as part of the pre-auction process. *Incentive Auction R&O*, 29 FCC Rcd at 6840, para. 668 n.1861.

the decisions reached in this Report and Order is inconsistent with the Spectrum Act.<sup>43</sup>

## B. Area Served Under Commencing Operations Definition

14. We adopt our proposal that a licensee's notification of commencement of operations covers the area served by its planned commercial service infrastructure deployment.<sup>44</sup> The licensee's commercial service deployment area is determined by the specific locations of the base stations it will construct to provide contiguous coverage to its customers in the area; the outermost base station sites form the boundary of the area. Each site included within this boundary must be capable of handing over mobile traffic to at least one other site within the boundary on the same licensed frequency. Many commenters support defining the area covered by a licensee's notification of commencement in a way that allows secondary and unlicensed users access to spectrum that might otherwise lay fallow until wireless operations begin in all geographic areas under a license rather than just in certain areas.<sup>45</sup>

15. We decline to adopt the proposals of AT&T, CCA, and CTIA that would require secondary and unlicensed users to vacate the entire Partial Economic Area ("PEA") when a 600 MHz Band wireless licensee commences operations in just one particular portion of a PEA.<sup>46</sup> These commenters argue that granting licensees access to the entire PEA will free them of the burden of continually having to update data on the scope of their deployment merely to obtain interference protection over a changing deployment area.<sup>47</sup> We are not persuaded that our decision herein will impose an undue burden on 600 MHz Band wireless licensees. While a 600 MHz Band wireless licensee may need to provide notice for new areas, the rules we adopt will permit these licensees to plan for, and roll out service to, large or small areas of deployment, as they see fit, based on their business plans and needs, rather than predefined geographic boundaries. Although allowing 600 MHz Band wireless licensees exclusive access to their entire licensed area upon their first RF transmission might be less burdensome, it could result in the spectrum lying fallow for a longer period of time than is necessary.<sup>48</sup> Instead, our

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<sup>43</sup> OTI, PK, and WISPA agree the Spectrum Act does not prohibit the transition framework the Commission has created because the Spectrum Act does not contain any language prohibiting the continued, productive post-transition use of the 600 MHz spectrum by secondary and unlicensed users. *See OTI and PK Commencing Operations Reply Comments* at 14-18; *WISPA Commencing Operations Reply Comments* at 8-9.

<sup>44</sup> *See Commencing Operations PN*, 30 FCC Rcd at 3203, para. 6.

<sup>45</sup> *See, e.g., DSA Commencing Operations Comments* at 1; *Google Commencing Operations Comments* at 2-3; *NAB Commencing Operations Comments* at 2-3; *OTI and PK Commencing Operations Reply Comments* at 5, 12-13; *PTV Commencing Operations Reply Comments* at 3-5; *Shure Commencing Operations Reply Comments* at 6-7; *WISPA Commencing Operations Reply Comments* at 6. *See also Microsoft Commencing Operations Comments* at 2.

<sup>46</sup> *See AT&T Commencing Operations Comments* at 10; *CTIA Commencing Operations Comments* at 7-9; *CCA Commencing Operations Reply Comments* at 4.

<sup>47</sup> *See AT&T Commencing Operations Reply Comments* at 11 ("licensees should not be under any sort of continuing obligation to provide updated information about the precise areas in which any of its radiofrequency transmissions in the 600 MHz band are occurring in its exclusively licensed spectrum"); *CTIA Commencing Operations Comments* at 9 ("wireless carriers should only be required to submit a single notice that will apply throughout their licensed area and will require all secondary and/or unlicensed services . . . to cease operating on the licensed 600 MHz spectrum"). These commenters also argue that as the primary user of the spectrum, a 600 MHz Band wireless licensee should have immediate, unimpeded, and exclusive access to its licensed spectrum throughout its entire licensed area when it makes its first RF transmission, regardless of whether the licensee plans to immediately provide wireless service to the entire licensed area. *See AT&T Commencing Operations Comments* at 10; *CTIA Commencing Operations Comments* at 7-9; *CCA Commencing Operations Reply Comments* at 4. We reject this argument for the reasons discussed below.

<sup>48</sup> *See, e.g., DSA Commencing Operations Comments* at 1; *Google Commencing Operations Comments* at 2-3; *NAB Commencing Operations Comments* at 2-3; *OTI and PK Commencing Operations Reply Comments* at 5, 12-13; *PTV Commencing Operations Reply Comments* at 3-5; *Shure Commencing Operations Reply Comments* at 6-7; *WISPA Commencing Operations Reply Comments* at 6. *See also Microsoft Commencing Operations Comments* at 2.



decision maintains the balance struck in the *Incentive Auction R&O* to promote access to the 600 MHz Band for wireless licensees when and where they need it while providing an orderly transition process for secondary and unlicensed users that currently are serving consumer needs.<sup>49</sup>

16. Further, while a license issued for the 600 MHz Band does include the right to exclusive use, it does not include the immediate right to exclude for the entire license area.<sup>50</sup> 600 MHz Band wireless licensees will have all of the rights and obligations conferred by the Commission's *Incentive Auction R&O*, including the right to exclusive use in areas where the licensee commences operations and provides the requisite notification to secondary and unlicensed users prescribed by the transition procedures adopted therein.<sup>51</sup> Until the licensee commences operations in areas of their geographic licenses where there is a likelihood of receiving harmful interference, secondary and unlicensed users retain their right to operate in the 600 MHz Band. The approach we are adopting regarding the area to be covered by a 600 MHz Band wireless licensee's notification is consistent with the Commission's prior spectrum management decisions,<sup>52</sup> and its other decisions regarding the transition process in the *Incentive Auction R&O*.<sup>53</sup>

### C. First Field Application Testing

17. Although the wireless industry generally opposed the Commission's proposed definition of commencement of operations, it has, through CTIA, suggested "a compromise" that would modify this definition to include "market testing" in addition to site commissioning testing.<sup>54</sup> CTIA describes market testing as a phase prior to site commissioning in which the wireless licensee deploys "prototype equipment in a limited number of markets to determine if the equipment actually performs as expected in the real-world (as compared to laboratory performance) and if the propagation models and software that have been developed accurately model the capabilities of the new radiofrequency equipment."<sup>55</sup> CTIA

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<sup>49</sup> *Incentive Auction R&O*, 29 FCC Rcd at 6834, para. 655.

<sup>50</sup> See *CTIA Commencing Operations Comments* at 8 (defining notice to extend to less than the entire PEA conflicts "with the exclusive rights purchased by wireless operators") See also *AT&T Commencing Operations Comments* at 5 ("the Commission has required secondary licensees to cease operations and make way for exclusive use licensees in previous spectrum reallocations").

<sup>51</sup> See, e.g., *AT&T Commencing Operations Comments* at 2 ("The Commission should ensure that winning bidders obtain the full array of rights that come with the licenses they have purchased, including the ability to exclude interfering operators from the spectrum"). But see Reply Comments of the National Association of Broadcasters at 2 (filed May 1, 2015) ("many LPTV and translator station owners purchased their spectrum rights when they purchased licenses on the secondary market") (*NAB Commencing Operations Reply Comments*).

<sup>52</sup> See, e.g., *Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, ET Docket No. 95-157, First Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 8825, 8858-59, para 65 (1996) (microwave users allowed in the 2 GHz band until the PCS licensee needs the spectrum in an area); *Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, ET Docket No. 98-153, Memorandum Opinion and Order and Further Notice of Proposed Rule Making, 18 FCC Rcd 3857, 3886, para. 74 (2003) (citing *AT&T Wireless Services, Inc. v. FCC*, 270 F.3d 959, 964 (D.C. Cir. 2001) for the position that "even an exclusive licensee cannot object to secondary use of its spectrum as long as no harmful interference results").

<sup>53</sup> See generally *Incentive Auction R&O*, 29 FCC Rcd at 6833-47, paras. 655-88. See also *supra* para. 3.

<sup>54</sup> *CTIA Sept 9, 2015 ex parte* at 1. CTIA indicates that what it has termed "market testing" may also be referred to as "cluster testing" or "first field application testing." *Id.* at 2 n.3.

<sup>55</sup> *Id.* at 2. Specifically, CTIA states that during this phase, new 600 MHz Band wireless licensees will need to: "(1) test different base station equipment from a variety of vendors; (2) test different antennas from different vendors (and different antenna configurations); (3) measure coverage in the market (as compared to predicted coverage from the propagation model); (4) test functioning of hardware and software within the base station equipment; and (5) measure the effects of impairments (both domestic and foreign) that will remain in the 600 MHz band from full

(continued....)

states that this testing is conducted in a limited number of markets – “typically . . . only a fraction of the areas where full commercial launch will occur” – and typically within only a portion of the market area – a cluster or clusters of base station sites.<sup>56</sup> More specifically, CTIA states that such testing usually involves “two to six test areas, comprising from as little as 10 sites to 200-300 sites,” covering generally no more than 1,000 square miles.<sup>57</sup> CTIA asserts that if 600 MHz Band wireless licensees are not able to conduct market testing of new equipment, software, and possibly technology on their licensed frequencies without the presence of secondary and unlicensed users, deployment of mobile broadband services in the band will be delayed, which it argues would be contrary to Congress’s paramount objective in granting the FCC authority to hold the incentive auction.<sup>58</sup>

18. Subsequently, AT&T responded to Commission staff inquiries about how it conducts what it terms first field application (“FFA”) testing.<sup>59</sup> According to AT&T, FFA testing for a new spectrum band “consists of three main areas of evaluation – network hardware, software, and devices [and] . . . incorporates as many different combinations of morphologies (rural, suburban and urban) and network configurations as practicable, to emulate the actual environments found in the network.”<sup>60</sup> AT&T further explains that base station hardware testing covers all possible combinations of baseband and radiohead configurations at a cluster of 20-30 sites to ensure the hardware is working as designed and is compatible with existing network facilities.<sup>61</sup> Testing how devices interoperate with hardware and software in the new band typically requires a cluster of 50-150 sites.<sup>62</sup> Finally, AT&T states that software testing to ensure that new hardware and devices are fully operational requires the largest testing area, “as many as 200-300 sites, to cover as many possible combinations of morphology and hardware and software configurations” as exist in a nationwide network.<sup>63</sup> AT&T indicates that it performs FFA testing in areas that are among the first areas where it plans to deploy commercial service, and asserts FFA testing in 600 MHz will be critical because there has been no prior commercial wireless deployment in the band.<sup>64</sup>

19. As an initial matter, the terminology that the wireless industry uses to refer to this type of testing appears to vary from operator to operator. For convenience, we will use AT&T’s term – first field application – which conveys more precisely than other terms the nature and scope of this testing. The FFA testing that CTIA and AT&T describe as being essential to timely deployment of 600 MHz Band wireless service would not fit squarely within the definition of “commencing operations” that we proposed in the *Commencing Operations PN* and adopt in this Report and Order, because FFA testing may involve equipment, antennas and locations that are not permanent. We decline to revise our general definition of when a carrier will be deemed to “commence operations” as CTIA recently advocates.<sup>65</sup> Nevertheless, we are persuaded that it is in the public interest to permit 600 MHz Band wireless licensees to undertake FFA testing on their licensed frequencies in limited areas free from potential interference

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power broadcast television stations (as opposed to the predicted levels of interference from the Commission’s engineering models).” *Id.*

<sup>56</sup> *Id.* at 1-3.

<sup>57</sup> *Id.* at 3.

<sup>58</sup> *Id.* at 4.

<sup>59</sup> *AT&T Sept 21, 2015 ex parte* at 1.

<sup>60</sup> *Id.* at 1-2.

<sup>61</sup> *See id.* at 2.

<sup>62</sup> *Id.* at 2.

<sup>63</sup> *Id.* at 2.

<sup>64</sup> *Id.* at 2.

<sup>65</sup> *See CTIA Sept 9, 2015 ex parte* at 1.

from secondary and unlicensed users, because such testing will speed deployment of the 600 MHz Band and accelerate the use of these frequencies by 600 MHz wireless licensees to provide service to consumers. We also are persuaded that the limited exception we establish for FFA testing will not upset the balance we strike between promoting ready access to the 600 MHz Band for wireless licensees while providing an orderly transition process for secondary and unlicensed users.

20. Therefore, we provide a limited exception to the rule defining commencement of operations, to permit 600 MHz Band licensees to conduct FFA testing on their licensed frequencies in advance of site activation and commissioning testing without the presence of secondary and unlicensed users. Based on information presented by AT&T<sup>66</sup> and on FCC staff network engineering expertise, we expect that FFA testing pursuant to this exception would be done in a small number of areas, with the parameters presented as typical by CTIA<sup>67</sup> constituting the upper bound on what we would consider reasonable. In most cases, FFA testing should require fewer test areas, fewer sites,<sup>68</sup> and cover more restricted geographic areas. Further, we expect that FFA testing would be done only in license areas where 600 MHz Band wireless licensees expect to rapidly deploy service to end users, and that this deployment will follow the FFA testing phase as soon as possible.<sup>69</sup> In the areas in which a 600 MHz Band licensee intends to take advantage of this exception, it must notify secondary and unlicensed users of the need to vacate the spectrum by following the transition procedures adopted in the *Incentive Auction R&O* and the *Part 15 Report and Order*.<sup>70</sup> In portions of the license area that do not contain sites involved in the licensee's FFA testing, secondary and unlicensed users will be allowed to continue operating until the close of the transition period or when the licensee notifies them of its intent to commence operations as defined in this Report and Order.<sup>71</sup>

#### D. Other Issues

21. We reject as untimely requests for reconsideration of several commenters that we modify the transition procedures established in the *Incentive Auction R&O*.<sup>72</sup> The Commission previously

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<sup>66</sup> See *supra* para. 18.

<sup>67</sup> See *supra* para. 17.

<sup>68</sup> In particular, it is our understanding that in many cases, FFA software testing, which CTIA and AT&T say typically involves 200-300 sites, may take place without implicating radiofrequency transmissions. With respect to deployment of the 600 MHz Band, we expect that 600 MHz Band wireless licensees conducting software testing in such situations would not notify secondary and unlicensed users to vacate the band for these tests.

<sup>69</sup> See *CTIA Sept 9, 2015 ex parte* at Appendix A.

<sup>70</sup> See *id.* at 4-5. See also *supra* para. 3, nn. 6, 8 & 9 (citing *Incentive Auction R&O*, 29 FCC Rcd at 6839-42, 6844, paras. 668-71, 674, 680); *Part 15 Report and Order* at paras. 238-44.

<sup>71</sup> See *CTIA Sept 9, 2015 ex parte* at Appendix A. See also *supra* para. 3.

<sup>72</sup> Specifically, AT&T argues that the Commission should require that all secondary and unlicensed users cease operations by the end of the 39-month Post-Auction Transition Period or at an earlier date if a licensee provides 120 days' notice that it intends to commence operations. *AT&T Commencing Operations Comments* at 3-4. AT&T also requests an expedited enforcement mechanism to clear unlicensed or secondary users that fail to vacate the spectrum within the applicable timeframe. *Id.* at 10. CTIA asks that wireless licensees be granted control of the process for, and details of, notice of commencement of service. *CTIA Commencing Operations Comments* at 9. CP Communications and Shure requested that licensed professional microphone users be treated like LPTV stations and allowed to continue operating indefinitely in the 600 MHz Band until they receive advance written notice that a 600 MHz Band licensee intends to commence operations and that the microphone user will cause interference to that wireless provider. Comments of CP Communications, LLC at 2 (filed May 1, 2015); *Shure Commencing Operations Reply Comments* at 3. Shure also asks that a wireless licensee be required to certify that it has begun site commissioning tests and that all power systems and backhaul connectivity are installed and operational. *Shure Commencing Operations Reply Comments* at 7. Finally, WISPA argues that a sixty day advance notification period should be provided to unlicensed users before they must vacate the 600 MHz Band. *WISPA Commencing*

(continued...)

determined in the *Incentive Auction R&O* the circumstances under which secondary and unlicensed users may continue operating in the 600 MHz Band after the spectrum has been licensed for wireless services and set forth specific requirements for when those secondary and unlicensed users must vacate the band.<sup>73</sup> In addition, the Commission adopted procedures that wireless licensees must use to notify secondary and unlicensed users that they are commencing operations.<sup>74</sup> None of the aforementioned parties filed petitions for reconsideration of our decisions on the issues they now seek to have modified.<sup>75</sup> We therefore reject these requests as untimely petitions for reconsideration.<sup>76</sup> With respect to CTIA's concern that competitively sensitive information provided to white spaces database administrators needs to be treated as confidential,<sup>77</sup> we have already addressed this issue in the *Part 15 Report and Order*.<sup>78</sup>

22. Finally, we are redesignating Section 27.19 of the Commission's rules as Section 27.1321 and adding two undesignated center headings to Subpart N (600 MHz Band) of Part 27.<sup>79</sup> Section 27.19 applies only to 600 MHz Band licensees<sup>80</sup> and therefore should be included in Subpart N, which is the general subtitle for the 600 MHz Band. We are also adding the additional undesignated center headings to provide greater clarity to Subpart N. None of these rule changes require prior notice and opportunity for comment under the Administrative Procedure Act (APA) because Section 553(b)(3)(B) of the APA provides exceptions to the notice-and-comment requirement when, among other things, the agency finds for good cause that the notice and comment procedures are "impracticable, unnecessary, or contrary to the

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Operations Comments at 4. See also *OTI and PK Commencing Operations Reply Comments* at 9 ("A substantial but not overly long notification period [of 30 days] benefits both licensees and unlicensed operators.").

<sup>73</sup> See generally *Incentive Auction R&O*, 29 FCC Rcd at 6833-47, paras. 655-88; see also *supra* para. 3. In the *Incentive Auction R&O*, the Commission also decided that licensed and unlicensed wireless microphones could continue operating in the 600 MHz band on a non-interference basis but would be required to cease operations no later than the end of Post-Auction Transition Period. See *Incentive Auction R&O*, 29 FCC Rcd at 6846, para. 687.

<sup>74</sup> See generally *Incentive Auction R&O*, 29 FCC Rcd at 6833-47, paras. 655-88.

<sup>75</sup> Petitions to reconsider the *Incentive Auction R&O* were due September 15, 2014. See 47 U.S.C. § 405(a); 47 C.F.R. § 1.429(d). See also 47 C.F.R. § 1.4(b)(1); 79 FR 48442 (Aug. 15, 2014). The parties have not attempted to demonstrate extraordinary circumstances that might justify a waiver of the deadline for seeking reconsideration. See *Reuters Ltd. v. FCC*, 781 F.2d 946, 951-52 (D.C. Cir. 1986). The Commission has already addressed the issues raised in the Petitions for Reconsideration. See *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, First Order on Reconsideration and Notice of Proposed Rulemaking, 30 FCC Rcd 6668 (2015); *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Second Order on Reconsideration, 30 FCC Rcd 6746 (2015). Similarly, no party sought reconsideration of the Commission's hard deadline for wireless microphone operations and the Commission did not revise this decision. See *Promoting Spectrum Access for Wireless Microphone Operations*, GN Docket Nos. 14-166, Report and Order, 30 FCC Rcd 8739, 8757 n.116 (2015). Furthermore, the Commission again rejected any suggestion that wireless microphones could have access to the repurposed 600 MHz Band until wireless licensees commenced operations, stating that wireless microphones remained subject to a hard deadline and to "different transition rules" than white space devices. See *Part 15 Report and Order* at para. 288.

<sup>76</sup> We agree with commenters that attempts to have the Commission reconsider the circumstances in which these secondary and unlicensed users must cease operating in the 600 MHz Band are untimely. See *NAB Commencing Operations Reply Comments* at 3-4; *OTI and PK Commencing Operations Reply Comments* at 12 n.26; *PTV Commencing Operations Reply Comments* at 5-6. Nevertheless, we reiterate that the Commission will use appropriate enforcement mechanisms to ensure compliance with the transition procedures.

<sup>77</sup> See *CTIA Sept 9, 2015 ex parte* at 4.

<sup>78</sup> See *Part 15 Report and Order* at para. 244. Any party seeking to modify the determinations made in the *Part 15 Report and Order* may seek reconsideration in that proceeding.

<sup>79</sup> See 47 C.F.R. § 27.19.

<sup>80</sup> The rule lists the requirements for operating base and fixed stations in the 600 MHz downlink band in close proximity to Radio Astronomy Observatories. See 47 C.F.R. § 27.19.

public interest.”<sup>81</sup> These rule changes are non-substantive and editorial in nature. As such, they constitute routine, “clean-up” matters that entail no substantive decisions of any consequence or significance to industry or the general public. Accordingly, we find that it is unnecessary, within the meaning of Section 553(b)(3)(B), to provide notice and opportunity for comment before adopting these rule revisions. For the same reason, we also find good cause to make these non-substantive, editorial revisions of the rules.

**E. Ordering Clauses.**

23. IT IS ORDERED, pursuant to the authority found in Sections 1, 4, 7, 301, 303, 307, 308, 309, 316, 319, 332, 403, of the Communications Act of 1934, as amended, and sections 6004, 6402, 6403, and 6407 of Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156, 47 U.S.C. §§ 151, 154, 157, 301, 303, 307, 308, 309, 316, 319, 332, 403, 1404, 1452, and 1454, the Report and Order in GN Docket No. 12-268 IS ADOPTED.

24. IT IS FURTHER ORDERED that the Commission’s rules ARE HEREBY AMENDED as set forth in Appendix A.

25. IT IS FURTHER ORDERED that the rules adopted herein WILL BECOME EFFECTIVE 30 days after the date of publication in the *Federal Register*, except for Sections 15.713(b)(2)(iv), 15.713(j)(10), 15.715(n), and 73.3700(g)(4), which the Commission previously stated contain new or modified information collection requirements that require approval by the Office of Management and Budget under the Paperwork Reduction Act and will become effective after the Commission publishes a notice in the *Federal Register* announcing such approval and the relevant effective date.<sup>82</sup>

26. IT IS FURTHER ORDERED that the Commission’s Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Report and Order in GN Docket No. 12-268, including the Supplemental Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

27. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of this Report and Order in GN Docket No. 12-268 in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch  
Secretary

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<sup>81</sup> 5 U.S.C. § 553(b)(3)(B).

<sup>82</sup> *See Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, 79 FR 48442 (Aug. 15, 2014); *see also Part 15 Report and Order* at para. 295.

APPENDIX A

Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 15, 27, 73, and 74 as follows:

**PART 15—RADIO FREQUENCY DEVICES**

1. The authority citation for part 15 continues to read as follows:

Authority: 47 U.S.C. 154, 302a, 303, 304, 307, 336, 544a, and 549.

\* \* \* \* \*

2. Section 15.236 is amended by revising paragraphs (c)(2) and (e)(2) to read as follows:

**§ 15.236 Operation of wireless microphones in the bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-698 MHz.**

\* \* \* \* \*

(c) \* \* \*

(1) \* \* \*

(2) Frequencies in the 600 MHz service band on which a 600 MHz service licensee has not commenced operations, as defined in § 27.4 of this chapter. Operation on these frequencies must cease no later than the end of the post-auction transition period, as defined in § 27.4 of this chapter. Operation must cease immediately if harmful interference occurs to a 600 MHz service licensee.

\* \* \* \* \*

(e) \* \* \*

(1) \* \* \*

(2) The following distances outside of the area where a 600 MHz service licensee has commenced operations, as defined in § 27.4 of this chapter.

Type of station	Separation distance in kilometers	
	Co-channel	Adjacent channel
Base	7	0.2
Mobile	35	31

\* \* \* \* \*

3. Section 15.707 is amended by revising paragraph (a)(5) to read as follows:

**§ 15.707 Permissible channels of operation.**

(a)(1) \* \* \*

(5) 600 MHz service band. White space devices may operate on frequencies in the 600 MHz service band in areas where 600 MHz band licensees have not commenced operations, as defined in § 27.4 of this chapter.

\* \* \* \* \*

4. Section 15.711 is amended by revising paragraph (a) to read as follows:

**§ 15.711 Interference avoidance methods.**

Except as provided in § 15.717 of this part, channel availability for a white space device is determined based on the geo-location and database access method described in paragraphs (a) through (e) of this section.

(a) Geo-location required. White space devices shall rely on a geo-location capability and database access mechanism to protect the following authorized service in accordance with the interference protection requirements of § 15.712: digital television stations, digital and analog Class A, low power, translator and booster stations; translator receive operations; fixed broadcast auxiliary service links; private land mobile service/commercial radio service (PLMRS/CMRS) operations; offshore radiotelephone service; low power auxiliary services authorized pursuant to §§ 74.801 through 74.882 of this chapter, including licensed wireless microphones; MVPD receive sites; wireless medical telemetry service (WMTS); radio astronomy service (RAS); 600 MHz service band licensees where they have commenced operations, as defined in § 27.4 of this chapter; and unlicensed wireless microphones used by venues of large events and productions/shows as provided under § 15.713(j)(9). In addition, protection shall be provided in border areas near Canada and Mexico in accordance with § 15.712(g).

\* \* \* \* \*

5. Section 15.712 is amended by revising paragraph (i) introductory text to read as follows:

**§ 15.712 Interference protection requirements.**

\* \* \* \* \*

(i) 600 MHz service band: Fixed and personal/portable devices operating in the 600 MHz Service Band must comply with the following co-channel and adjacent channel separation distances outside the defined polygonal area encompassing the base stations or other radio facilities deployed by a part 27 600 MHz Service Band licensee that has commenced operations, as defined in § 27.4 of this chapter.

\* \* \* \* \*

6. Section 15.713 is amended by revising paragraphs (b)(2)(iv) and (j)(10) introductory text to read as follows:

**§ 15.713 White space database.**

\* \* \* \* \*

(b) \* \* \*

(2) \* \* \*

(iv) 600 MHz service band operations in areas where the part 27 600 MHz service licensee has commenced operations, as defined in § 27.4 of this chapter.

(v) \* \* \*

\* \* \* \* \*

(j) \* \* \*

(10) 600 MHz service in areas where the part 27 600 MHz band licensee has commenced operations, as defined in § 27.4 of this chapter.

\* \* \* \* \*

7. Section 15.715 is amended by revising paragraph (n) to read as follows:

**§ 15.715 White space database administrator.**

\* \* \* \* \*

(n) Establish procedures to allow part 27 600 MHz service licensees to upload the registration information listed in § 15.713(j)(10) for areas where they have commenced operations, as defined in § 27.4 of this chapter, and to allow the removal and replacement of registration information in the database when



corrections or updates are necessary.

\* \* \* \* \*

## **PART 27—MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES**

8. The authority citation for part 27 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302a, 303, 307, 309, 332, 336, 337, 1403, 1404, 1451, and 1452, unless otherwise noted.

9. Section 27.4 is amended by adding the definitions “commence operations” to read as follows:

### **§ 27.4 Terms and definitions.**

Commence operations. A 600 MHz Band licensee is deemed to commence operations when it begins pre-launch site activation and commissioning tests using permanent base station equipment, antennas and/or tower locations as part of its site and system optimization in the area of its planned commercial service infrastructure deployment.

\* \* \* \* \*

10. Section 27.19 is redesignated as Section 27.1321.

11. Subpart N is amended by adding an undesignated center heading that precedes Section 27.1300 to read as “Competitive Bidding Provisions”

12. Subpart N is amended by adding an undesignated center heading that precedes Section 27.1320 to read as “Coordination/Notification Requirements”

## **PART 73—RADIO BROADCAST SERVICES**

13. The authority citation for part 73 continues to read:

Authority: 47 U.S.C. 154, 303, 334, 336, and 339.

14. Section 73.3700(a) is amended by revising paragraph (g)(4)(i), (g)(4)(ii)(B), (g)(4)(iii), and (g)(4)(v) to read as follows:

### **§ 73.3700 Post-Incentive Auction Licensing and Operation.**

(g) \* \* \*

(4) \* \* \*

(i) A wireless licensee assigned to frequencies in the 600 MHz band under part 27 of this chapter must

notify low power TV and TV translator stations of its intent to commence operations, as defined in § 27.4 of this chapter, and the likelihood of receiving harmful interference from the low power TV or TV translator station to such operations within the wireless licensee's licensed geographic service area.

\* \* \* \* \*

(ii) \* \* \*

(B) Indicate the date the new wireless licensee intends to commence operations, as defined in § 27.4 of this chapter, in areas where there is a likelihood of receiving harmful interference from the low power TV or TV translator station; and

\* \* \* \* \*

(iii) Low power TV and TV translator stations may continue operating on frequencies in the 600 MHz band assigned to wireless licensees under part 27 of this chapter until the wireless licensee commences operations, as defined in § 27.4 of this chapter, as indicated in the notification sent pursuant to this paragraph.

\* \* \* \* \*

(v) Low power TV and TV translator stations that are operating on the UHF spectrum that is reserved for guard band channels as a result of the broadcast television incentive auction conducted under section 6403 of the Spectrum Act may continue operating on such channels until the end of the post-auction transition period as defined in § 27.4 of this chapter, unless they receive notification from a new wireless licensee pursuant to the requirements of paragraph (g)(4) of this section that they are likely to cause harmful interference in areas where the wireless licensee intends to commence operations, as defined in § 27.4 of this chapter, in which case the requirements of paragraph (g)(4) of this section will apply.

**PART 74—EXPERIMENTAL RADIO, AUXILIARY, SPECIAL BROADCAST AND OTHER PROGRAM DISTRIBUTIONAL SERVICES**

15. The authority citation for part 74 continues to read as follows:

Authority: 47 U.S.C. 154, 303, 307, 309, 336 and 554.

\* \* \* \* \*

16. Section 74.602 is amended by revising paragraph (h)(5)(ii) to read as follows:

**§74.602 Frequency assignment.**

\* \* \* \* \*

(h) \* \* \*

(5) \* \* \*

(ii) A wireless licensee assigned to frequencies in the 600 MHz band under part 27 of this chapter must notify the licensee of a TV STL, TV relay station, or TV translator relay station of its intent to commence operations, as defined in § 27.4 of this chapter, and the likelihood of harmful interference from the TV STL, TV relay station, or TV translator relay station to those operations within the wireless licensee's licensed geographic service area.

\* \* \* \* \*

17. Section 74.802 is amended by revising paragraph (f) to read as follows:

**§74.802 Frequency assignment.**

\* \* \* \* \*

(f) Operations in 600 MHz band assigned to wireless licensees under part 27 of this chapter. A low power auxiliary station that operates on frequencies in the 600 MHz band assigned to wireless licensees under part 27 of this chapter must cease operations on those frequencies no later than the end of the post-auction transition period, as defined in § 27.4 of this chapter. During the post-auction transition period, low power auxiliary stations will operate on a secondary basis to licensees of part 27 of this chapter, i.e., they must not cause to and must accept harmful interference from these licensees, and must comply with the distance separations in § 15.236(e)(2) of this chapter from the areas specified in § 15.713(j)(10) of this chapter in which a licensee has commenced operations, as defined in § 27.4 of this chapter.

## APPENDIX B

## Supplemental Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (“RFA”),<sup>1</sup> an Initial Regulatory Flexibility Analysis (“IRFA”) was incorporated in the *Incentive Auction NPRM*.<sup>2</sup> The Commission sought written public comment on the proposals in the *Incentive Auction NPRM*, including comment on the IRFA.<sup>3</sup> The Commission subsequently incorporated a Final Regulatory Flexibility Analysis (“FRFA”) in the *Incentive Auction R&O*.<sup>4</sup> This Supplemental FRFA conforms to the RFA and incorporates by reference the FRFA in the *Incentive Auction R&O*. It reflects changes to the Commission’s rules arising from defining “commence operations” in this Report and Order (“*Commencing Operations R&O*”)

**A. Need for, and Objectives of, the Order**

2. In the *Incentive Auction R&O*, the Commission adopted transition rules that permit low power television (“LPTV”), TV translator stations, fixed broadcast auxiliary service operations (“BAS”), and unlicensed white space devices (hereinafter, collectively, “secondary and unlicensed users”) to continue operating in the 600 MHz Band after the spectrum has been licensed for wireless services (hereinafter “600 MHz Band”).<sup>5</sup> Those secondary and unlicensed users must vacate once the wireless licensee “commences operations” in its licensed 600 MHz spectrum, or a date certain.<sup>6</sup> Thereafter, the Commission issued the *Commencing Operations PN* and sought comment on the appropriate definition of “commence operations” in light of the Commission’s objective to accomplish an orderly transition of unlicensed and secondary users out of the 600 MHz Band.<sup>7</sup> By this *Commencing Operations R&O*, the Commission defines when and in what areas 600 MHz Band wireless licensees will be deemed to “commence operations” for the purpose of establishing when those secondary and unlicensed operators must cease operations and vacate the 600 MHz Band.

3. The *Commencing Operations R&O* affirms the Commission’s commitment to implement a transition process that promotes ready access to the repurposed spectrum by 600 MHz Band wireless licensees when and where they need it, while at the same time providing for an orderly transition process for secondary and unlicensed users that currently are serving various important consumer needs.<sup>8</sup>

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<sup>1</sup> See 5 U.S.C. § 603. The RFA, see 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996, Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

<sup>2</sup> *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, 27 FCC Rcd 12357, 12523-544, Appendix B (2012) (*Incentive Auction NPRM*).

<sup>3</sup> *Id.* at 12523, Appendix B, para. 1.

<sup>4</sup> See *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Report and Order, 29 FCC Rcd 6567, 6947-66, Appendix B (2014) (*Incentive Auction R&O*).

<sup>5</sup> See generally *id.* at 6833-47, paras. 655-88.

<sup>6</sup> See generally *id.* at 6833-47, paras. 655-88. This Report and Order only addresses the requirements relating to secondary and unlicensed users vacating the 600 MHz Band where 600 MHz Band wireless licensees commence operations. We note that secondary and unlicensed users also may be required to vacate portions of the 600 MHz Band to the extent the auction system assigns a television station to a channel in the 600 MHz Band. See *Broadcast Incentive Auction Scheduled to Begin March 29, 2016; Procedures for Competitive Bidding in Auction 1000, Including Initial Clearing Target Determination, Qualifying to Bid, and Bidding in Auctions 1001 (Reverse) and 1002 (Forward)*, AU Docket No. 14-252, Public Notice, FCC 15-78 at para. 25 (rel. Aug. 11, 2015).

<sup>7</sup> Comment Sought on Defining Commencement of Operations in the 600 MHz Band, GN Docket No. 12-268, *Public Notice*, 30 FCC Rcd 3200, paras. 1-2 (2015) (*Commencing Operations PN*).

<sup>8</sup> See *Incentive Auction R&O*, 29 FCC Rcd at 6834, para. 655. 600 MHz Band wireless licensees will not have access to the repurposed spectrum during the Post-Auction Transition Period unless full power and Class A

(continued....)

Specifically, in the *Commencing Operations R&O*, the Commission defines “commence operations” as when a 600 MHz Band licensee begins pre-launch site activation and commissioning tests using permanent base station equipment, antennas and/or tower locations as part of its site and system optimization in the area of its planned commercial service infrastructure deployment (hereinafter “site commissioning tests”). It is at this juncture that a wireless licensee moves from construction to testing its system, and needs unfettered access to its licensed spectrum to optimize its network in advance of launching commercial service to customers. In addition, we adopt the proposal in the *Commencing Operations PN* that a licensee’s notification of commencement will cover the area served by its commercial service infrastructure deployment.<sup>9</sup> We also create a limited exception to these rules to permit 600 MHz Band wireless licensees to conduct first field application testing in advance of site commissioning testing using their licensed frequencies in limited areas. Our decision balances the policy goal of providing an orderly transition process for secondary and unlicensed users in the band with that of providing 600 MHz Band wireless licensees with exclusive access to their spectrum as soon as they are ready to deploy wireless service in the band.

#### **B. Summary of Significant Issues Raised by Public Comments**

4. No commenters directly responded to the IRFA in the *Incentive Auction NPRM*. Nonetheless, the FRFA in the *Incentive Auction R&O* addressed concerns in the record about the impact on small businesses of various auction design issues.<sup>10</sup> No commenters raised concerns regarding the impact on small businesses of the proposed definition of “commence operations” in the *Commencing Operations PN*. Furthermore, the SBA Chief Counsel filed no comments in this matter.

#### **C. Description and Estimate of the Number of Small Entities to Which Rules Will Apply**

5. The RFA directs the Commission to provide a description of and, where feasible, an estimate of the number of small entities that will be affected by the adopted rules.<sup>11</sup> The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small government jurisdiction.”<sup>12</sup> In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.<sup>13</sup> A small business concern

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television operations have ceased operations in their licensed area. See *id.* at 6573, 6801-6802, 6833-34 para. 11, 573, 655. The Post-Auction Transition Period consists of a 39-month period following the issuance of the *Channel Reassignment PN* that will announce the results of the auction and repacking process. See, e.g., *id.* at 6782, 6796, paras. 525, 559-60; see also 47 C.F.R. § 27.4.

<sup>9</sup> See *Commencing Operations PN*, 30 FCC Rcd at 3203, para. 6.

<sup>10</sup> Two parties filed Petitions for Reconsideration of the *Incentive Auction R&O* related to the FRFA. These issues were addressed in the *Second Order on Reconsideration. Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Second Order on Reconsideration, 30 FCC Rcd 6746 (2015).

<sup>11</sup> 5 U.S.C. § 603(b)(3).

<sup>12</sup> *Id.* § 601(6).

<sup>13</sup> *Id.* § 601(3) (incorporating by reference the definition of “small business concern” in 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies “unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register.” *Id.* § 601(3).

is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.<sup>14</sup>

6. As noted, we incorporated a FRFA into the *Incentive Auction R&O*. In that analysis, the Commission described in detail the various small business entities that may be affected by the final rules, including wireless telecommunications carriers, manufacturers of unlicensed devices, and television broadcasting.<sup>15</sup> This *Commencing Operations R&O* amends the final rules adopted in the *Incentive Auction R&O* affecting wireless telecommunications carriers, manufacturers of unlicensed devices, and television broadcasting. This Supplemental FRFA incorporates by reference the description and estimate of the number of small entities from the FRFA in the *Incentive Auction R&O*.<sup>16</sup>

**D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities**

7. In Section D of the FRFA, incorporated into the *Incentive Auction R&O*, the Commission described in detail the projected recordkeeping, reporting, and other compliance requirements for small entities arising from the rules adopted in the *Incentive Auction R&O*.<sup>17</sup> This Supplemental FRFA incorporates by reference the requirements described in Section D of the FRFA. Moreover, in this *Commencing Operations R&O*, the Commission is not requiring any additional reporting, recordkeeping, or other compliance requirements for small entities other than those requirements that were already required by the *Incentive Auction R&O*.

**E. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered**

8. The RFA requires an agency to describe any significant alternatives that it has considered in developing its approach, which may include the following four alternatives (among others): “(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities.” The Commission has minimized the significant economic impact on small entities because no new reporting, recordkeeping, or other compliance requirements result from the *Commencing Operations R&O*. Rather, any such reporting, recordkeeping, or compliance requirements were adopted previously in the *Incentive Auction R&O*. Furthermore, alternative proposals in the record would have defined “commence operations” such that it would provide immediate access to the entire licensed area instead of just the area of planned commercial service infrastructure deployment. This proposal would have had a larger economic impact on secondary and unlicensed operations, many of which are small entities, because it would have required a greater number of such operations to vacate the 600 MHz Band sooner than is required under the definition of “commence operations” that we adopted in the *Commencing Operations R&O*. The Commission believes the definition of “commence operations” it has adopted strikes the appropriate balance by promoting ready access to the repurposed spectrum by 600 MHz Band wireless licensees when and where they need it, while at the same time providing for an orderly transition process for secondary and unlicensed users that currently are serving various important consumer needs.

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<sup>14</sup> 15 U.S.C. § 632. Application of the statutory criteria of dominance in its field of operation and independence are sometimes difficult to apply in the context of broadcast television. Accordingly, the Commission’s statistical account of television stations may be over-inclusive.

<sup>15</sup> See *Incentive Auction R&O* at 6950-51, 6953-54 Appendix B, paras. 15-18, 26-27.

<sup>16</sup> See *id.* at Appendix B.

<sup>17</sup> *Id.* at 6959-64, Appendix B, paras. 37-54.

**F. Federal Rules that Might Duplicate, Overlap, or Conflict with the Rules**

9. None.

**G. Report to Congress**

10. The Commission will send a copy of the *Commencing Operations R&O*, including this Supplemental FRFA, in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act. A copy of the *Commencing Operations R&O* and Supplemental FRFA (or summaries thereof) will also be published in the Federal Register.

**H. Report to Small Business Administration**

11. The Commission will send a copy of this *Commencing Operations R&O*, including this Supplemental FRFA, to the Chief Counsel for Advocacy of the Small Business Administration.

**APPENDIX C**  
**Commenter Short Names**

<b>Short name</b>	<b>Name of Filer</b>
AT&T	AT&T Services, Inc.
CCA	Competitive Carriers Association
CP Communications	CP Communications, LLC
CTIA	CTIA – The Wireless Association <sup>®</sup>
DSA	The Dynamic Spectrum Alliance
Google	Google, Inc.
Microsoft	Microsoft Corporation
NAB	National Association of Broadcasters
OTI and PK	Open Technology Institute at New America and Public Knowledge
PTV	The Public Broadcasting Service, Association of Public Television Stations, and the Corporation for Public Broadcasting (PTV)
Sennheiser	Sennheiser Electronic Corporation
Shure	Shure Incorporated
WISPA	The Wireless Internet Service Providers Association