

**FCC FACT SHEET**\*

**Signal Boosters Second Report and Order and Second Further Notice of Proposed Rulemaking**  
WT Docket No. 10-4

**Background:** Consumer Signal Boosters are devices that individuals can purchase and use to extend and improve their wireless coverage indoors, underground, and in rural areas. These boosters must comply with strict FCC technical requirements designed to ensure that they work “out of the box” to extend coverage without harming wireless networks. The original Consumer Signal Booster rules, adopted in 2013, limit operation to specific spectrum bands that were in operation at the time and authorize two types of boosters: (1) Provider-Specific (extending coverage of only one particular wireless provider); and (2) Wideband (extending coverage of all providers in range). Both types of boosters are currently limited to “personal use” by subscribers of wireless service.

**What the Second Report and Order would do:**

- Eliminate the personal use restriction on Provider-Specific Consumer Signal Boosters so that businesses, public safety entities, educational institutions, and other enterprise users can also benefit from these boosters. This change would, for example, enable a small business to use a Provider-Specific Consumer Signal Booster to improve signal strength within its office.

**What the Second Further Notice of Proposed Rulemaking would do:**

- Seek comment on whether to expand Consumer Signal Booster operations to additional spectrum bands (*e.g.*, bands that did not support wireless services to consumers when the original rules were adopted).
- Propose to remove unnecessary barriers to embedding Consumer Signal Boosters within vehicles such as cars, boats, and recreational vehicles.
- Propose to facilitate enterprise use of Consumer Signal Boosters by (1) eliminating the personal use restriction on Wideband Consumer Signal Boosters and (2) authorizing non-subscribers to operate both types of Consumer Signal Boosters. These changes would, for example, enable a small business in an area with poor wireless coverage to use a Consumer Signal Booster to improve coverage for its employees and customers on all wireless networks.

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

In the Matter of

Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of
the Commission's Rules to Improve Wireless
Coverage Through the Use of Signal Boosters
WT Docket No. 10-4

SECOND REPORT AND ORDER AND
SECOND FURTHER NOTICE OF PROPOSED RULEMAKING\*

Adopted: []

Released: []

Comment Date: [30 days after date of publication in the Federal Register]
Reply Comment Date: [60 days after date of publication in the Federal Register]

By the Commission:

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I. INTRODUCTION

1. Consumer Signal Boosters are devices that the general public can purchase and use to

\* This document has been circulated for tentative consideration by the Commission at its March 22, 2018 open meeting. The issues referenced in this document and the Commission's ultimate resolutions of those issues remain under consideration and subject to change. This document does not constitute any official action by the Commission. However, the Chairman has determined that, in the interest of promoting the public's ability to understand the nature and scope of issues under consideration, the public interest would be served by making this document publicly available. The Commission's ex parte rules apply and presentations are subject to "permit-but-disclose" ex parte rules. See, e.g., 47 CFR §§ 1.1206, 1.1200(a). Participants in this proceeding should familiarize themselves with the Commission's ex parte rules, including the general prohibition on presentations (written and oral) on matters listed on the Sunshine Agenda, which is typically released a week prior to the Commission's meeting. See 47 CFR §§ 1.1200(a), 1.1203.

extend and improve their wireless coverage in areas where signals are weak—for example, in rural areas with fringe coverage or indoors at public venues, libraries, schools, and offices. These boosters must comply with strict Commission technical requirements designed to ensure that they work “out of the box” to extend coverage without harming wireless networks. Consumer Signal Booster rules currently limit operation of the boosters to specific spectrum bands and to “personal use” by subscribers of wireless service.

2. We now take additional steps towards improving consumers’ wireless experience. In the Second Report and Order, we provide increased flexibility in the use of Provider-Specific Consumer Signal Boosters by removing the personal use restriction, thereby permitting enterprise use of these boosters for the benefit of employees and the public. In the Second Further Notice, we propose to take further actions to enhance the usefulness and effectiveness of both types of Consumer Signal Boosters by extending the signal booster program to additional spectrum bands; revising the rules to accommodate signal boosters embedded in vehicles; lifting the personal use restriction on Wideband Consumer Signal Boosters; and providing a means for non-subscriber signal booster operators to register with wireless providers.

## II. BACKGROUND

3. Mobile wireless service licensees may use a variety of solutions to ensure robust coverage within their licensed areas, including large and small cells, distributed antenna systems to improve coverage indoors, and signal boosters to extend the range of mobile devices both outside and indoors. Signal boosters controlled, engineered, and deployed by licensees are known as “Industrial Signal Boosters.” These Industrial Signal Boosters operate under the flexible technical rules for the spectrum band in use. In contrast, “Consumer Signal Boosters” are a special type of booster, governed by strict technical rules, allowing consumers to purchase, install, and use these safe and effective devices without special engineering or professional installation.<sup>1</sup> Consumer Signal Boosters are defined as devices that are marketed to and sold for personal use by individuals<sup>2</sup> and are designed to be used “out of the box” by individuals to improve their wireless coverage within a limited area such as a home, car, boat, or recreational vehicle.<sup>3</sup>

4. The Commission adopted the regulatory framework for Consumer Signal Boosters on February 20, 2013.<sup>4</sup> This framework allows consumers to realize the benefits of using Consumer Signal Boosters while preventing, controlling, and, if necessary, resolving interference to wireless networks; it was developed in collaboration with various industry stakeholders and was based upon industry consensus.<sup>5</sup> The Commission stated that its actions would “enhance wireless coverage for consumers, particularly in rural, underserved, and difficult-to-serve areas by broadening the availability of signal boosters while ensuring that boosters do not adversely affect wireless networks.”<sup>6</sup> In particular, the Commission authorized the use of Consumer Signal Boosters under wireless provider licenses subject to

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<sup>1</sup> We note that, while we consider in this docket ways to make Consumer Signal Boosters more widely useful and available, nothing here restricts a licensee’s ability to install Industrial Signal Boosters or other solutions.

<sup>2</sup> *Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission’s Rules to Improve Wireless Coverage Through the Use of Signal Boosters*, Report and Order, 28 FCC Rcd 1663, 1668, para. 13 (2013) (*Report and Order*).

<sup>3</sup> *Id.* at 1665, para. 4.

<sup>4</sup> *See generally id.*

<sup>5</sup> *Id.* at 1664, 1668, 1683-84, 1685, paras. 2, 11, 53, 57; *see Ex Parte* Letter from Michiel Lotter, Nextivity, Inc., Sean Haynberg, V-COMM, L.L.C., Russell D. Lukas, Counsel to Wilson Electronics, Inc., Steve B. Sharkey, T-Mobile USA, Inc., and John T. Scott, III, Verizon Wireless, to Marlene H. Dortch, Secretary, Federal Communications Commission (June 8, 2012) (Consolidated Proposal). The Consolidated Proposal consisted of a set of proposed consumer booster rules. *Report and Order*, 28 FCC Rcd at 1668, para. 11.

<sup>6</sup> *Report and Order*, 28 FCC Rcd at 1664, para. 1.

requirements, *inter alia*, that operators of Consumer Signal Boosters must: (1) obtain some form of licensee consent to operate the booster; (2) register the booster with their provider; (3) use a booster that meets the Network Protection Standard (NPS)<sup>7</sup> adopted in the *Report and Order* and is FCC certified; (4) operate the Consumer Signal Booster only on certain frequencies used for the provision of subscriber-based services; and (5) use a booster that is appropriately labeled consistent with the rules.<sup>8</sup> In addition, the Commission adopted two sets of technical parameters that it deemed to satisfy the NPS<sup>9</sup>—one for Wideband Consumer Signal Boosters<sup>10</sup> and a second for Provider-Specific Consumer Signal Boosters.<sup>11</sup>

5. The Commission sought to ensure that consumers would not be unnecessarily burdened in obtaining consent from their providers by permitting most consumers to secure consent simply by registering with their wireless provider.<sup>12</sup> The Commission allowed providers flexibility in creating their registration systems, but required that each provider’s registration page, at a minimum, collect: (1) the name of the Consumer Signal Booster owner and/or operator, if different individuals; (2) the make, model, and serial number of the device; (3) the location of the device; and (4) the date of initial operation, while also stating that providers should “collect only such information [as] is reasonably related to” facilitating provider control and interference resolution.<sup>13</sup> Each of the four nationwide providers has since set up such a registration system.<sup>14</sup>

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<sup>7</sup> The NPS is a flexible set of requirements for the design and manufacture of Consumer Signal Boosters, intended to couple signal booster innovation with sufficient safeguards to protect wireless networks from harmful interference. *Id.* at 1682-92, paras. 49-76. The Commission incorporated the Consolidated Proposal, including recommended safe harbors for provider-specific and wideband signal boosters, into the NPS. *Id.* at 1684, 1685, paras. 53, 57; *see id.* at 1668, 1683-84, paras. 11, 53-55.

<sup>8</sup> *Report and Order*, 28 FCC Rcd at 1665, 1671, 1675, paras. 4, 21, 29; 47 CFR § 20.21(a), (d), (e), (f). In addition, consumers must: operate the booster on a secondary, non-interference basis and shut it down if it causes harmful interference; use the device only with manufacturer-specified antennas, cables, and/or couplings; and not deactivate any features of the Consumer Signal Booster that are designed to mitigate harmful interference to wireless networks. 47 CFR § 20.21(a); *Report and Order*, 28 FCC Rcd at 1671, para. 21.

<sup>9</sup> *Report and Order*, 28 FCC Rcd at 1682, 1690-91, paras. 49, 70-74. The Commission also provided an alternative method of satisfying NPS: “[a]ny entity seeking to certify a Consumer Signal Booster which does not meet the enumerated safeguards contained in the [NPS] may request a determination of ‘equivalent protection’ from the Wireless Telecommunications Bureau.” *Id.* at 1691-92, para. 76.

<sup>10</sup> Wideband Consumer Signal Boosters are boosters that may operate on the frequencies and in the market areas of multiple licensees. *Id.* at 1690, para. 72; 47 CFR § 20.3.

<sup>11</sup> Provider-Specific Consumer Signal Boosters are boosters that can only operate on the frequencies and in the market areas of the licensee(s) specified during the certification of the device. *Report and Order*, 28 FCC Rcd at 1691, para. 74; 47 CFR § 20.3.

<sup>12</sup> *Report and Order*, 28 FCC Rcd at 1672-73, 1677, paras. 25, 35. In response to the original Notice of Proposed Rulemaking in this proceeding, *Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission’s Rules to Improve Wireless Coverage Through the Use of Signal Boosters*, Notice of Proposed Rulemaking, 26 FCC Rcd 5490 (2011), Verizon Wireless, T-Mobile, Sprint, AT&T, and the member companies of the Rural Wireless Association (RWA) (f/k/a Rural Telecommunications Group, Inc.) voluntarily committed to consent to all Consumer Signal Boosters that meet the NPS. *Report and Order*, 28 FCC Rcd at 1672-73, para. 25 & nn.49-53. The Commission found that this voluntary “blanket” commitment constituted sufficient licensee consent for a subscriber to operate a Consumer Signal Booster on that provider’s network. *Id.* at 1672-73, para. 25. It therefore also found that subscribers to Verizon, T-Mobile, Sprint, AT&T, and RWA members need only register their Consumer Signal Boosters prior to operation and generally need not seek further consent from their wireless provider. *Id.* at 1672-73, para. 25.

<sup>13</sup> *Id.* at 1700-01, para. 106. The Commission also forbade the providers from charging a fee. *Id.*

<sup>14</sup> AT&T, Signal Booster Registration, <https://securec45.securewebsession.com/attsignalbooster.com/> (last visited Feb. 12, 2018); Sprint, Signal Boosters, <https://www.sprint.com/en/legal/signal-boosters> (last visited Feb. 12, 2018);

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6. The Commission also adopted rules that require Consumer Signal Booster operators to use the device only for “personal use”<sup>15</sup> and to be a subscriber of the wireless provider on whose network they are using the signal booster, thus authorizing the device as subscriber equipment under the wireless provider’s blanket license.<sup>16</sup> These requirements were imposed on both Provider-Specific Consumer Signal Boosters and Wideband Consumer Signal Boosters.<sup>17</sup> The Commission defined a “signal booster operator” as “the person or persons with control over the functioning of the signal booster, or the person or persons with the ability to deactivate it in the event of technical malfunctioning or harmful interference to a primary radio service.”<sup>18</sup>

7. Following the adoption of the *Report and Order*, the Commission in an *Order on Reconsideration and Further Notice of Proposed Rulemaking* addressed two petitions for reconsideration and adopted some minor technical changes as a result.<sup>19</sup> In addition, the Commission requested comment on whether to remove the personal use restriction on the operation of Provider-Specific Consumer Signal Boosters (but explicitly not on Wideband Consumer Signal Boosters).<sup>20</sup> Subsequently, in 2015 and 2016, all four nationwide wireless service providers made required public disclosures regarding their consent for their subscribers to use Consumer Signal Boosters,<sup>21</sup> and in 2016, the Wireless Telecommunications Bureau (Bureau) requested comment on the current state of the Consumer Signal Booster market and any relevant technologies that could enhance the interference-mitigating features of signal boosters.<sup>22</sup>

8. To date, the record indicates that the signal booster rules have functioned as designed. As of February 21, 2018, the Commission had certified 138 Consumer Signal Boosters.<sup>23</sup> In response to the 2015 and 2016 requests for information, both providers and manufacturers reported positive

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T-Mobile, Signal Booster Registration, <https://support.t-mobile.com/docs/DOC-9827> (last visited Feb. 12, 2018); Verizon, Consumer Signal Boosters, <https://www.verizonwireless.com/solutions-and-services/accessories/register-signal-booster/#3> (last visited Feb. 12, 2018).

<sup>15</sup> 47 CFR § 20.21(a), (g); *see also Report and Order*, 28 FCC Rcd at 1668, para. 13.

<sup>16</sup> *See Report and Order*, 28 FCC Rcd at 1671-77, paras. 21-34 & n.47; 47 CFR § 20.21(a).

<sup>17</sup> *See Report and Order*, 28 FCC Rcd at 1668, para. 13 (“We define Consumer Signal Boosters as devices that are marketed to and sold for personal use by individuals.”); 47 CFR § 20.21(a).

<sup>18</sup> 47 CFR § 20.3.

<sup>19</sup> *Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission's Rules to Improve Wireless Coverage Through the Use of Signal Boosters*, Order on Reconsideration and Further Notice of Proposed Rulemaking, 29 FCC Rcd 11563, 11566-70, paras. 9-23 (2014) (*Further Notice*).

<sup>20</sup> *Id.* at 11570-71, paras. 25-28.

<sup>21</sup> *Wireless Telecommunications Bureau Reminds Nationwide Wireless Service Providers of Obligation to Release Information Regarding Consumer Signal Boosters by March 2, 2015*, Public Notice, 30 FCC Rcd 195, 195 (WTB 2015); *Wireless Telecommunications Bureau Reminds Nationwide Wireless Service Providers of Obligation to Release Information Regarding Consumer Signal Boosters*, Public Notice, 31 FCC Rcd 967, 967 (WTB 2016); *see Report and Order*, 28 FCC Rcd at 1677, para. 34 (directing all nationwide wireless providers to “publicly indicate their status regarding consent for each Consumer Signal Booster that has received FCC certification as listed in a Public Notice to be released by the Wireless Telecommunications Bureau 30 days prior to each” of March 1, 2015, and March 1, 2016). The Bureau deemed the wireless providers to have complied with their reporting obligations by filing their status in this docket, WT Docket No. 10-4.

<sup>22</sup> *Wireless Telecommunications Bureau Seeks Comment on the Current State of Consumer Signal Boosters*, Public Notice, 31 FCC Rcd 1748, 1749 (WTB 2016); *see Report and Order*, 28 FCC Rcd at 1677, para. 78 (directing the Wireless Telecommunications Bureau to release a public notice seeking comment on “additional technologies that may enhance the interference-mitigating features of signal boosters already required by our rules”).

<sup>23</sup> *See* FCC, OET Laboratory Division Equipment Authorization System, <https://apps.fcc.gov/oetcf/eas/index.cfm> (last visited Feb. 21, 2018).

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experiences under the rules. For instance, T-Mobile stated that “[t]he lack of any known serious widespread incidents demonstrates that the process has worked well and generally prevented poorly designed consumer devices from entering the market, while making signal boosters widely available and easily usable by consumers.”<sup>24</sup> Verizon reported that, as of March 30, 2016, it had more than 10,000 registered Consumer Signal Booster users and that the Consumer Signal Booster rules “have all but eliminated the interference problems caused by signal boosters manufactured prior to the rules taking effect.”<sup>25</sup> Similarly, Sprint reported that it “has found that Consumer Signal Boosters certified by OET as meeting the required Network Protection Standards are currently causing no significant negative impact on [its] Network operations.”<sup>26</sup> In addition, Wilson Electronics, LLC (Wilson), a Consumer Signal Booster manufacturer, reported in late 2016 that, “[s]ince the NPS went into effect, [it] has shipped more than 750,000 Commission-approved consumer boosters and received no reports that any of its boosters caused interference to a wireless network.”<sup>27</sup> Surecall, another Consumer Signal Booster manufacturer, reported in early 2017 that it had sold “about 50 thousand of these new units in the United States and Surecall has received no complaints of harmful interference resulting from its signal boosters.”<sup>28</sup>

### III. SECOND REPORT AND ORDER

9. The Consumer Signal Booster rules appear to have achieved the Commission’s goals of expanding Americans’ access to well-designed boosters that do not harm wireless providers’ networks. The rules adopted in the *Report and Order*, however, were conservatively designed and tailored to meet the needs of individual consumers. Given the positive results highlighted above, we find that we can expand the availability of Consumer Signal Boosters without creating a risk of unacceptable interference. Accordingly, in this Second Report and Order, we further expand access to signal boosters by eliminating a restriction on their use that we now find unnecessary. Specifically, based on the record before us, we remove the personal use restriction on the operation of Provider-Specific Consumer Signal Boosters so that small businesses, public safety entities, and other organizations also may take full advantage of these boosters to improve their access to quality wireless coverage. In the accompanying Second Further Notice of Proposed Rulemaking, we propose to remove the personal use restriction for Wideband Consumer Signal Boosters as well.

10. The Commission in the *Report and Order* required that prior to operating a Consumer Signal Booster, the subscriber, *inter alia*, must (1) obtain the consent of the licensee providing service to the subscriber,<sup>29</sup> and (2) register the booster with the licensee providing service to the subscriber.<sup>30</sup> These requirements help ensure that wireless providers retain sufficient control over signal boosters to avoid a violation of Section 310(d) of the Communications Act<sup>31</sup> and are key components to the success of the Consumer Signal Booster regulatory regime. Coupled with the NPS, these requirements have ensured

<sup>24</sup> T-Mobile Mar. 30, 2016 Comments at 2.

<sup>25</sup> Verizon Mar. 30, 2016 Comments at 2. Verizon stated that it “has experienced no significant booster-related interference issues since 2014.” *Id.*

<sup>26</sup> Sprint Consumer Signal Booster Information at 2 (filed Mar. 8, 2016).

<sup>27</sup> Wilson Electronics, LLC, Petition for Further Rulemaking, WT Docket No. 10-4, at iv (filed Dec. 21, 2016) (Wilson Petition).

<sup>28</sup> Surecall Comments on Wilson Petition at 2.

<sup>29</sup> 47 CFR § 20.21(a)(1).

<sup>30</sup> *Id.* § 20.21(a)(2).

<sup>31</sup> *Report and Order*, 28 FCC Rcd at 1674-75, paras. 28-29. 47 U.S.C. § 310(d) states that “[n]o construction permit or station license, or any rights thereunder, shall be transferred, assigned, or disposed of in any manner, voluntarily or involuntarily, directly or indirectly, or by transfer of control of any corporation holding such permit or license, to any person except upon application to the Commission and upon finding by the Commission that the public interest, convenience, and necessity will be served thereby.”

that signal boosters are effective at improving signal coverage without causing harmful interference to wireless networks.

11. The Commission originally included the personal use restriction on Consumer Signal Booster operation and use in the expectation that it would help support a streamlined process for meeting the consent and registration requirements. In particular, by restricting operation to the subscriber's personal use, the Commission ensured that consumers need only obtain consent from and register their devices with the wireless provider to which they subscribe.<sup>32</sup> For example, if a subscriber plans to use his booster with only his own provider for his own personal use, he would need only register with that provider. Or, if he and a housemate plan to use the same booster with two different wireless providers (his provider and the housemate's different provider), each would need to register with his own provider.<sup>33</sup>

12. In the *Further Notice*, the Commission explained that, because a Provider-Specific Consumer Signal Booster operates only on a single wireless provider's spectrum, once the subscriber has obtained provider consent to use the signal booster, any transmission from the signal booster would be authorized.<sup>34</sup> The Commission therefore questioned whether the personal use restriction remains necessary for Provider-Specific Consumer Signal Boosters.<sup>35</sup> The *Further Notice* specifically asked whether the Commission should eliminate the personal use restriction for Provider-Specific Consumer Signal Boosters, and it sought comment on several related questions.<sup>36</sup> Commenters responding to the *Further Notice* overwhelmingly supported elimination of the personal use restriction for Provider-Specific Consumer Signal Boosters.<sup>37</sup>

13. As described below, we find that the personal use restriction on Provider-Specific Consumer Signal Boosters is unnecessary and that removing it is in the public interest. We therefore amend Section 20.21 to remove this restriction.<sup>38</sup> The action we take here will expand access to signal boosters for small businesses, public safety entities using subscriber-based services in support of their

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<sup>32</sup> *Further Notice*, 29 FCC Rcd at 11571, para. 26. In the *Report and Order*, we addressed a corollary to this matter in our discussion of *de minimis*, third-party use of Wideband Consumer Signal Boosters. *See Report and Order*, 28 FCC Rcd at 1681-82, para. 48. There, we recognized that Wideband Consumer Signal Booster use will not necessarily be limited to the purchaser of the device, and the device therefore may be used on the spectrum of a wireless provider for whom the device was not registered. *Id.* We sought to maintain flexibility for consumers while mitigating the impact to wireless providers by authorizing *de minimis* use, i.e., occasional, incidental use of a Consumer Signal Booster by a third party under the license of the third party's wireless provider. *Id.*

<sup>33</sup> *See id.* at 1681-1682, para. 48 & n.105.

<sup>34</sup> *Further Notice*, 29 FCC Rcd at 11571, para. 27.

<sup>35</sup> *Id.*

<sup>36</sup> *Id.* at 11571, para. 28.

<sup>37</sup> *See* ACUTA Comments at 1-5; CellAntenna Comments at 3; EWA FNPRM Comments at 2; Nextivity FNPRM Comments at 1, 5-8; T-Mobile FNPRM Comments at 1, 3-4. No commenters opposed eliminating the personal use restriction for Provider-Specific Consumer Signal Boosters. We note that ACUTA supported the proposal to eliminate the personal use restriction on Provider-Specific Consumer Signal Boosters and also urged the Commission to remove the personal use restriction for Wideband Consumer Signal Boosters. ACUTA Comments at 1-5. CellAntenna requested that the Commission impose a streamlined consent process for Industrial Signal Boosters, like that for Consumer Signal Boosters, "including a shot clock." CellAntenna Comments at 6-9. AT&T filed reply comments in which it took no position as to whether the Commission should remove the personal use restriction for Provider-Specific Consumer Signal Boosters but in which it objected to the proposals by ACUTA and CellAntenna. AT&T Reply Comments at 1-2. Verizon also filed reply comments that only addressed the CellAntenna proposals. Verizon Reply Comments at 1-3. The record in this proceeding does not include sufficient information on this new proposal to support the Commission taking the action requested by CellAntenna.

<sup>38</sup> *See* Appendix A for the revised text of Section 20.21.

operations,<sup>39</sup> and other organizations, furthering the goals the Commission first set out to achieve in the *Report and Order*. When these rule changes take effect, once a subscriber—whether an individual or a non-individual<sup>40</sup>—properly registers its Provider-Specific Consumer Signal Booster with its provider, anyone who subscribes to that provider also may use the device. For example, if a small business owner registers her Provider-Specific Consumer Signal Booster with and receives the consent of her wireless provider, any employees or customers who subscribe to that same provider would then be free to use that booster without registering. We reiterate that the registering subscriber is an “operator” under our rules and as such must adhere to the requirements of our rules.<sup>41</sup>

14. In adopting this change, we conclude that the personal use restriction on Provider-Specific Consumer Signal Boosters is not needed to prevent unauthorized operation of these boosters or to ensure compliance with our signal booster rules. As stated in the *Further Notice* and explained above, the fact that a subscriber must register his Provider-Specific Consumer Signal Booster with his provider renders the personal use restriction unnecessarily restrictive.<sup>42</sup> As Nextivity points out, “[a]s required by the Commission’s rules and implemented in the equipment certification process, Provider-Specific Consumer Signal Boosters can only be used with an appropriate carrier registration and therefore the carrier always retains control over the Provider-Specific Consumer Signal Booster. . . . In no instance can a Provider-Specific Consumer Signal Booster be used to operate on spectrum without the carrier’s consent.”<sup>43</sup>

15. In addition to concluding that the personal use restriction on Provider-Specific Consumer Signal Boosters is unnecessary, we also find that modifying our rules as described in this Second Report and Order will affirmatively further the public interest. As T-Mobile explains, “[t]here are numerous practical considerations that favor the use of a provider-specific consumer booster in a non-personal use setting. For example, a small business may need to install a booster to improve signal strength within its office.”<sup>44</sup> The inclusion of the personal use restriction on Provider-Specific Consumer Signal Boosters, however, prevents such use and blocks whole segments of the public—e.g., small businesses, institutions of higher education, office parks, factories, warehouses, and government buildings—from taking advantage of the boosters’ benefits. As T-Mobile also notes, “[t]he only options available to such [small businesses and others] would be to deploy an industrial signal booster, switch carriers, or continue to endure indoor coverage issues.”<sup>45</sup> We also agree with Nextivity that retaining the restriction on Provider-

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<sup>39</sup> Public safety signal boosters are governed by a different set of regulatory requirements and policies. *See Report and Order*, 28 FCC Rcd at 1714-33, paras. 144-97.

<sup>40</sup> A non-individual is “a partnership and each partner is eighteen years of age or older; a corporation; an association; a state, territorial, or local government unit; or a legal entity.” 47 CFR § 20.3.

<sup>41</sup> *See id.* §§ 20.3 (defining “Signal booster operator”), 20.21(a).

<sup>42</sup> *Further Notice*, 29 FCC Rcd at 11571, para. 27.

<sup>43</sup> Nextivity FNPRM Comments at 4-5; *see Report and Order*, 28 FCC Rcd at 1691, para. 74 (“[Provider-Specific Consumer Signal Boosters] are designed to operate only on a particular licensee(s)’s frequencies and in that licensee(s)’s market areas. Thus, Provider-Specific Consumer Signal Boosters may be certificated and operated only with the consent of the licensee(s) whose frequencies are being amplified by the device. Accordingly, any application for certification of a Provider-Specific Consumer Signal Booster must include a certification, made under penalty of perjury, that the applicant has received the consent of the relevant licensee(s) to manufacture the device.”).

<sup>44</sup> T-Mobile FNPRM Comments at 3; *see also* Nextivity FNPRM Comments at 5-7.

<sup>45</sup> T-Mobile FNPRM Comments at 3. As T-Mobile explains, “[i]ndustrial signal boosters . . . are intended to cover large areas, such as shopping malls and stadiums, and generally operate at much higher power than provider-specific consumer boosters [and] require installation by the carrier or a professional installer. Accordingly, when compared to provider-specific consumer boosters, industrial signal boosters involve a more time-consuming and expensive

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Specific Consumer Signal Boosters “denies a significant segment of the American business sector from fully participating in the nation’s wireless transformation. Further, the prohibition disproportionality penalizes small business users in rural and edge areas and dense indoor urban environments where wireless coverage often is especially challenged.”<sup>46</sup>

16. Accordingly, based on the record before us, we eliminate the personal use restriction on Provider-Specific Consumer Signal Boosters. Not only is this restriction unnecessary, but its removal will have cognizable public interest benefits by permitting more entities to take advantage of the recognized benefits of Provider-Specific Consumer Signal Boosters.

#### IV. SECOND FURTHER NOTICE OF PROPOSED RULEMAKING

17. In this Second Further Notice, we propose additional steps to enhance the usefulness of signal boosters in improving access to wireless service while continuing to guard against unacceptable interference to the operations of wireless providers. Our proposals below are intended to extend additional benefits to users of both Provider-Specific and Wideband Consumer Signal Boosters. Thus, we propose to expand the service bands on which all Consumer Signal Boosters may operate, develop consumer advisory requirements suitable for any embedded Consumer Signal Boosters (whether Provider-Specific or Wideband), and facilitate enterprise<sup>47</sup> use of both Provider-Specific Consumer Signal Boosters and Wideband Consumer Signal Boosters.

##### A. Additional Spectrum Bands

18. In the *Report and Order*, the Commission authorized the use of Consumer Signal Boosters in the wireless radio service spectrum bands that were being used for the provision of commercial wireless services at the time: Cellular (824-849 MHz and 869-894 MHz), Broadband PCS (1850-1915 MHz and 1930-1995 MHz), AWS-1 (1710-1755 MHz and 2110-2155 MHz), 700 MHz Lower A through E (698-746 MHz) and Upper C (746-757 MHz and 776-787 MHz) Blocks, and 800 MHz Enhanced Specialized Mobile Radio (ESMR) (817-824 MHz and 862-869 MHz).<sup>48</sup> Recognizing that “subscriber-based services may be offered in additional bands in the future,” the Commission also stated that, “[a]s consumer demand for signal boosters in these bands arises,” it would seek comment on “how best to expand our signal booster framework to accommodate such additional bands.”<sup>49</sup>

19. To ensure that Consumer Signal Boosters continue to meet the needs of American telecommunications users, no matter what type of mobile device they use or on what band(s) that device operates, we seek comment on whether and how the Commission can expand the number of spectrum bands for which Consumer Signal Boosters are authorized. We specifically seek comment on whether to permit the operation of Consumer Signal Boosters in certain additional wireless radio service spectrum bands and how our technical rules would need to be amended to accommodate the additional bands.

20. In determining which, if any, new bands are appropriate for use with Consumer Signal Boosters, we will take into account several considerations. Initially, we look at whether the band is used to provide services to consumers or other non-licensee users such as public safety responders (assuming

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process, thus prohibiting their use in many cases.” T-Mobile FNPRM Comments at 3-4 (citing *Report and Order*, 28 FCC Rcd at 1669, 1677, paras. 16, 36).

<sup>46</sup> Nextivity FNPRM Comments at 7.

<sup>47</sup> We use the term “enterprise” to refer to any non-individual, e.g., a small business, public safety entity, school, hospital, or governmental organization.

<sup>48</sup> *Report and Order*, 28 FCC Rcd at 1677-79, paras. 36-40; 47 CFR § 20.21(e)(3). The described frequencies for the ESMR band apply in most of the country but vary in the Southeast U.S. See *Improving Public Safety Communications in the 800 MHz Band*, Memorandum Opinion and Order, 20 FCC Rcd 16015, 16036, paras. 46-48 (2005).

<sup>49</sup> *Report and Order*, 28 FCC Rcd at 1678, para. 36.

they are using commercial spectrum rather than spectrum specifically designated for public safety). A Consumer Signal Booster is useful only if services are being provided and there are consumer or other devices operating on that spectrum that require an increased or improved signal that a Consumer Signal Booster might provide.

21. Second, we evaluate whether a meaningful number of the licensees in the band will consent to Consumer Signal Booster operation. Licensee involvement has been crucial to the formation of the Consumer Signal Booster rules, and the consent of the potentially affected licensees is key to the operation of the rules.<sup>50</sup> If a wireless provider does not consent to signal booster operation in its licensed spectrum, then that operation is not authorized.<sup>51</sup> We thus need to understand whether a meaningful number of the licensees in any bands being considered for addition to our Consumer Signal Booster rules would be willing to consent to operation of such equipment on the spectrum in any added bands. Without significant participation by wireless providers in a particular band, we are concerned that consumers may be confused about their ability to operate a Consumer Signal Booster in that band consistent with our rules. We fear that, as a result, consumers who purchase a Consumer Signal Booster may be unable to properly register the equipment and obtain the necessary licensee consent(s) and then will operate (illegally) the Consumer Signal Booster, possibly without even realizing they are violating our rules. We also must consider the practicality for signal booster manufacturers and the utility to consumers of adding new spectrum bands to Consumer Signal Boosters if only a small number of the licensees, representing only a small portion of the licensed operations in a particular band, indicate that they are likely to consent to signal booster usage in such bands. At the same time, if one licensee has a dominant position in a band and it is willing to consent to signal booster usage, then we must consider whether there is sufficient public interest benefit in adding that band to our signal booster program.

22. Third, we must consider the impact of other technologies and operations both within the band and in adjacent bands and whether Consumer Signal Booster operation would harm other users within the band or in adjacent bands (and vice versa). For example, if a band is being used for both fixed and mobile service, we need to understand whether the use of Consumer Signal Boosters for the mobile devices cause interference to the fixed devices. Similarly, we need to assess whether devices (either mobile or fixed) authorized in adjacent bands could affect the operation of Consumer Signal Boosters, or vice versa.

23. Fourth, in evaluating whether to authorize Consumer Signal Boosters in additional bands, we also must examine whether the current technical rules for signal boosters must be adjusted to accommodate any such new service bands. For example, Section 20.21 contains noise and gain limit rules as part of the requirements to ensure that signal boosters do not cause harmful interference to wireless providers' operations. The specifics of these limits are different for different frequency bands.<sup>52</sup> If we add new service bands to our signal booster program, we necessarily must determine the noise and gain limits to be imposed in those different bands in order to provide the same level of interference protection.

24. With the above criteria in mind, we specifically seek comment on whether we should authorize the operation of Consumer Signal Boosters in the 600 MHz (617-652 MHz and 663-698

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<sup>50</sup> As described above, the original framework for the Consumer Signal Booster rules was based upon a consensus agreement among booster manufacturers and wireless providers; the consent of wireless provider licensees is a fundamental underpinning of the rules and a necessity for the operation of Consumer Signal Boosters.

<sup>51</sup> See 47 U.S.C. §§ 301, 310(d).

<sup>52</sup> See 47 CFR § 20.21(e)(8)(i)(A)(2)(i), (e)(8)(i)(C)(2)(i), (e)(9)(i)(A)(2)(i), (e)(9)(i)(C)(2)(i).

MHz),<sup>53</sup> WCS (2305-2320 MHz and 2345-2360 MHz),<sup>54</sup> and BRS/EBS (2495-2690 MHz)<sup>55</sup> bands. Commenters should address how each consideration identified above weighs for or against including any of the proposed bands in our Consumer Signal Booster rules. Are there any other considerations that we should take into account in determining whether new bands are appropriate for use with Consumer Signal Boosters? Are there other bands we should consider adding to our Consumer Signal Booster rules? To the extent that commenters support adding other bands to our Consumer Signal Booster rules, they should address the above listed considerations, and any others that commenters demonstrate are relevant, in relation to those specific band(s) as well.

25. Further, are there costs associated with adding additional spectrum bands to our signal booster regime? What would be the benefits, quantifiable and otherwise, of permitting operation of Consumer Spectrum Boosters on additional bands? Are there any changes we would need to make to our Consumer Signal Booster requirements and technical specifications to accommodate any additional bands that may be added to the rules? How can we balance the risk of releasing into the market Consumer Signal Boosters with the ability to operate on bands for which not all licensees have consented with the benefit to consumers of using the devices on the networks for which there is consent? Finally, we also urge commenters to provide suggestions for other ways to expand the use of safe and reliable Consumer Signal Boosters.

#### **B. Embedded Consumer Signal Boosters**

26. The Commission in the *Report and Order* designed the Consumer Signal Booster rules to be flexible enough to allow the devices to be used in myriad situations and locations, while ensuring that they did not interfere with the operations of wireless providers' networks. Despite the success we have

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<sup>53</sup> See 47 CFR pt. 27; *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567 (2014); *Incentive Auction Closing and Channel Reassignment Public Notice*; *The Broadcast Television Incentive Auction Closes*; *Reverse Auction and Forward Auction Results Announced*; *Final Television Band Channel Assignments Announced*; *Post-Auction Deadlines Announced*, Public Notice, 32 FCC Rcd 2786 (MB/WTB 2017); T-Mobile, T-Mobile Ready To Rock New Spectrum With First 600 MHz LTE Smartphone & 5G-Ready Network Gear (Aug. 31, 2017), <https://newsroom.t-mobile.com/news-and-blogs/tmobile-600mhz.htm> (last visited Feb. 15, 2018).

<sup>54</sup> See 47 CFR pt. 27; *Amendment of Part 27 of the Commission's Rules To Govern the Operation of Wireless Commission's Services in the 2.3 GHz Band*, Report and Order and Second Report and Order, 25 FCC Rcd 11710 (2010); *Amendment of Part 27 of the Commission's Rules To Govern the Operation of WCS in the 2.3 GHz Band*; *Establishment of Rules and Policies for the DARS Service in the 2310-2360 MHz Frequency Band*, Order on Reconsideration, 27 FCC Rcd 13651 (2012); *WCS Auction Closes*; *Winning Bidders in the Auction of 128 Wireless Communications Service Licenses*; *FCC Form 600s Due May 12, 1997*, Public Notice, 12 FCC Rcd 21653 (WTB 1997); Phil Goldstein, AT&T Begins Deploying 2.3 GHz WCS Spectrum for LTE (Sept. 9, 2015), <https://www.fiercewireless.com/wireless/at-t-begins-deploying-2-3-ghz-wcs-spectrum-for-lte> (last visited Feb. 15, 2018).

Mobile operations are not permitted in the WCS C and D Blocks closest to the Satellite Digital Audio Radio Service bands (2315-2320 MHz and 2345-2350 MHz). 47 CFR § 27.50(a)(3)(ii). Operation in WCS therefore would only be permitted on the A and B Blocks (2305-2315 MHz and 2350-2360 MHz).

<sup>55</sup> See 47 CFR pt. 27; *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands*, Order on Reconsideration and Fifth Memorandum Opinion and Order, 21 FCC Rcd 5606 (2006); *Auction of Broadband Radio Service Licenses Closes*; *Winning Bidders Announced for Auction 86*, Public Notice, 24 FCC Rcd 1357 (WTB 2009); Monica Allevan, Sprint isn't the only one with 2.5 GHz aspirations (June 26, 2017), <https://www.fiercewireless.com/wireless/editor-s-corner-sprint-isn-t-only-one-2-5-ghz-aspirations> (last visited Feb. 15, 2018).

We note that the Commission in the *Report and Order* declined to permit the use of Consumer Signal Boosters in the BRS/EBS band at that time. *Report and Order*, 28 FCC Rcd at 1679, para. 41.

(continued....)

seen with implementation of the Consumer Signal Booster regulatory regime, it appears that businesses that wish to embed Consumer Signal Boosters within vehicles have been stymied by our rules—specifically, Section 20.21(f)(1)’s requirement that advisories be placed on the outside packaging of the device and on a label affixed to the device.<sup>56</sup> Because these Consumer Signal Boosters are embedded within a vehicle, and the consumer neither has access to nor sees the device or its packaging, these businesses, as a practical matter, are unable to comply with Section 20.21(f)(1).<sup>57</sup>

27. Expecting Consumer Signal Boosters to be designed to be used “out-of-the-box” by consumers, and based on the record before it, the Commission in the *Report and Order* required, among other things, that Consumer Signal Boosters be appropriately labeled,<sup>58</sup> and it adopted the labeling rules of Section 20.21(f).<sup>59</sup> Section 20.21(f)(1) requires that Consumer Signal Booster manufacturers, distributors, and retailers ensure that all signal boosters marketed on or after April 30, 2014,<sup>60</sup> include specific advisories concerning the device: “(i) [i]n on-line, point-of-sale marketing materials, (ii) [i]n any print or on-line owner’s manual and installation instructions, (iii) [o]n the outside packaging of the device, and (iv) [o]n a label affixed to the device.”<sup>61</sup> The Commission explained that the labeling requirement was the “best method to inform consumers about which devices are appropriate for their use and how to comply with our rules,” as well as to decrease interference to wireless networks.<sup>62</sup> The Commission also wanted consumers to be informed about the impact of signal boosters on E911 calls.<sup>63</sup>

28. While the Commission sought to make the Consumer Signal Booster rules as nimble as possible, and it contemplated the use of signal boosters in vehicles by authorizing mobile boosters,<sup>64</sup> commenters did not raise the scenario of embedding the devices within vehicles out of consumer view,

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<sup>56</sup> *Id.* § 20.21(f)(1)(iii), (iv). The Commission has granted waivers of Section 21.20(f)(1) to several companies for this purpose. See Letter to Jeffrey H. Olson, Counsel to Audi AG, from Roger S. Noel, Chief, Mobility Division, Wireless Telecommunications Bureau, FCC (Feb. 20, 2014), <https://www.fcc.gov/signal-boosters-vehicles-waivers> (Audi Letter); Letter to Laura Stefani, Counsel to Kathrein Automotive GmbH & Co. KG, from Roger S. Noel, Chief, Mobility Division, Wireless Telecommunications Bureau, FCC, 31 FCC Rcd 7061 (WTB 2016) (Kathrein Letter); Letter to William K. Coulter, Counsel for Porsche Cars North America, Inc., from Roger S. Noel, Chief, Mobility Division, Wireless Telecommunications Bureau, FCC (Aug. 7, 2017), <https://www.fcc.gov/signal-boosters-vehicles-waivers> (Porsche Letter) (collectively, the Labeling Waivers).

<sup>57</sup> See Audi Letter at 2; Kathrein Letter, 31 FCC Rcd at 7063; Porsche Letter at 2.

<sup>58</sup> *Report and Order*, 28 FCC Rcd at 1668, 1704-07, paras. 13, 119-24.

<sup>59</sup> 47 CFR § 20.21(f).

<sup>60</sup> *Id.* § 20.21(f)(1) required implementation of the rule by March 1, 2014. The Wireless Telecommunications Bureau, however, extended the deadline until April 30, 2014, to allow for adequate review and testing of these devices and to allow others to complete testing of their devices and apply for certification. *Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission’s Rules to Improve Wireless Coverage Through the Use of Signal Boosters*, Order, 29 FCC Rcd 1260, 1264, paras. 12, 14 (WTB 2014).

<sup>61</sup> Section 20.21(f)(1)(i)-(iv). Section 20.21(f)(1)(iv)(A)(I) requires the following advisory language: “This is a CONSUMER device. BEFORE USE, you MUST REGISTER THIS DEVICE with your wireless provider and have your provider’s consent. Most wireless providers consent to the use of signal boosters. Some providers may not consent to the use of this device on their network. If you are unsure, contact your provider. You MUST operate this device with approved antennas and cables as specified by the manufacturer. Antennas MUST be installed at least 20 cm (8 inches) from any person. You MUST cease operating this device immediately if requested by the FCC or a licensed wireless service provider. WARNING. E911 location information may not be provided or may be inaccurate for calls served by using this device.” *Id.* § 20.21(f)(1)(iv)(A)(I).

<sup>62</sup> *Report and Order*, 28 FCC Rcd at 1704, para. 119.

<sup>63</sup> *Id.* at 1705-06, para. 121.

<sup>64</sup> See *id.* at 1665, 1669, 1681, 1705, paras. 4, 14, 48, 120; see also 47 CFR § 20.3 (defining “Mobile Consumer Signal Booster”).

and the Commission accordingly did not account for such a scenario.<sup>65</sup> In light of the evolving use of Consumer Signal Boosters and our desire to encourage technological innovation, we propose to remove unnecessary barriers to embedding signal boosters within vehicles such as cars, boats, and recreational vehicles.<sup>66</sup> Specifically, for embedded Consumer Signal Boosters, we propose to amend Section 20.21(f)(1) to provide alternative advisory language to that now found in Section 20.21(f)(1)(iv)(A)(I) as well as an alternative to providing the advisory on the device and its packaging, as required by Section 20.21(f)(1)(iii)-(iv). We seek to strike a balance between providing flexibility in the Consumer Signal Booster marketplace and retaining the protections offered by the labeling requirement.

29. To achieve this goal, we propose that in lieu of placing the required advisory on the device and its packaging, vehicle manufacturers, distributors, and retailers of embedded Consumer Signal Boosters<sup>67</sup> instead be required to provide an alternative advisory to consumers in any materials provided at vehicle delivery, as well as to consumers when they register their vehicle with the vehicle manufacturer<sup>68</sup> (via whatever form is available to the consumer and in the manner the consumer chooses, i.e., online, by mail, etc.). We emphasize that these manufacturers, distributors, and retailers would remain responsible for ensuring that the alternative advisory is provided in any on-line, point-of-sale marketing materials and in any print or on-line owner's manual, as required by Section 20.21(f)(1)(i)-(ii).

30. Under our proposal, the alternative advisory would provide all the same warnings to consumers, including that they must register the embedded signal booster with and receive the consent of the appropriate wireless provider(s), and it additionally would include instructions for the consumer on how to disable the device for the specific vehicle. To provide maximum flexibility to manufacturers, distributors, and retailers of vehicles with embedded signal boosters, we propose to permit them both to craft their own processes for their customers to disable the device and to insert a description of that process into the advisory.<sup>69</sup> We caution, however, that we would expect that the chosen mode be one that the average consumer easily can undertake.<sup>70</sup> We contemplate that this proposed alternative advisory would serve to convey the vital consumer information the Commission specified in the initial rules, but in a common-sense manner for this utilization.

31. We seek comment on the above approach and ask commenters to provide information on the costs of complying with such a requirement. Do the benefits of providing an alternative delivery method for the advisory language for embedded Consumer Signal Boosters justify the costs that would be involved? Is the alternative advisory language sufficient to provide adequate notice to consumers? Is our method of delivery—via materials at vehicle delivery and in response to consumer registration of their

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<sup>65</sup> While the Commission repeatedly referred to the use of Consumer Signal Boosters in a vehicle, it did not discuss a situation in which the signal booster is embedded and inaccessible by the consumer. *See Report and Order*, 28 FCC Rcd at 1665, 1669, 1681, 1705, paras. 4, 14, 48, 120. In addition, a “Mobile Consumer Signal Booster” is defined as “a Consumer Signal Booster designed to operate in a moving vehicle.” 47 CFR § 20.3.

<sup>66</sup> While we recognize that placing a label on a signal booster that is eventually embedded in a vehicle (and any packaging in which the signal booster comes) certainly is not impossible, it creates an unnecessary obligation for these businesses as no consumer will ever see the booster or its packaging.

<sup>67</sup> As provided in Section 20.21(f)(1), manufacturers, distributors, and retailers of signal boosters are jointly responsible for ensuring that consumers receive the necessary advisories. *See* 47 CFR § 20.21(f)(1). In the case of boosters embedded within a vehicle, the vehicle's manufacturer, distributor, and retailer would be the manufacturer, distributor, and retailer under the rule.

<sup>68</sup> For example, many vehicle manufacturers offer online portals where customers can register to receive information and updates related to safety and maintenance. *See e.g.*, Porsche Registration <https://my.porsche.com/usa/login/registrierung/> (last visited Feb. 14, 2018); Audi Connect, <https://www.myaudiconnect.com/#/user/login> (last visited Feb. 14, 2018).

<sup>69</sup> This description would be inserted into the advisory and included with any applications for equipment authorization. *See* 47 CFR §§ 2.911(c), 20.21(e)(2).

<sup>70</sup> For example, consumers may be directed to press an easily accessible switch that disables the signal booster.

vehicle with the vehicle manufacturer—a sufficient means of ensuring that consumers receive the advisory? Is this approach the best way we can reduce the burden on businesses that wish to embed signal boosters in vehicles while ensuring consumers receive all necessary information? Is there a better way that we can achieve this goal? If so, what is that approach and why is it superior? Commenters should discuss the costs and benefits of any proposals.

32. In addition, how can we address the situation where a vehicle owner who has complied with all obligations associated with the embedded Consumer Signal Booster in his vehicle sells the vehicle to a third party in a private transaction? Would a new signal booster registration be required for this new user? How can we ensure that the new owner will satisfy the requirements for signal booster operation? What would be the responsibilities of a manufacturer, distributor, and/or retailer that has complied with all of its associated obligations for the original sale in such a scenario? Are there any other rules that we would need to revise to achieve our goal of balancing the limitations faced in connection with providing sufficient information about operation in connection with embedded signal boosters with ensuring that the owner of the vehicle meets all the applicable obligations? Are there other types of embedded uses that we should consider? If so, what other considerations are there? Finally, are there any other considerations regarding embedded Consumer Signal Boosters for which we have not accounted and should?

33. We also seek comment on how to treat the previously granted Labeling Waivers following any rule change we adopt based upon the record compiled in response to this Second Further Notice. We recognize that our proposed rules differ from the waiver conditions,<sup>71</sup> and, if the rules are adopted, the manufacturers party to the Labeling Waivers would need to alter their practices as a result. We seek comment on how we should handle the transition from the requirements of the Labeling Waivers to those of the proposed rules. How can we best balance the importance of timely compliance with the rule changes with the realities of their business? For example, should we require compliance by the production year following the rules' adoption so manufacturers are not forced to alter their manufacturing parameters mid-production?

### C. Enterprise Use

34. As we described above, the rules adopted in the *Report and Order* were designed specifically to benefit the general consumer, and they have worked well to that end. In the Second Report and Order, we take a significant step forward in expanding access to Consumer Signal Boosters by small businesses, public safety entities, educational institutions, and other enterprise users. There, we provide flexibility for enterprise and individual subscribers of a wireless provider to operate a Provider-Specific Consumer Signal Booster for non-personal use on that provider's spectrum. Here, we consider whether and how to expand that flexibility to permit different types of enterprise entities to take advantage of the benefits of both Provider-Specific and Wideband Consumer Signal Boosters, while continuing to ensure that all signal boosters function safely on those networks and without causing harmful interference. Specifically, we examine whether and how to enable enterprises (and individuals) to operate either type of Consumer Signal Booster—Provider-Specific or Wideband—on a provider's spectrum without subscribing to the provider's service. This would allow, for example, a small business in an area with poor wireless coverage to deploy a Consumer Signal Booster to improve coverage for its employees and customers on a single wireless network or on all wireless networks, regardless of the wireless provider to which the business subscribes. We generally seek comment on whether we should expand access to Consumer Signal Boosters in this way.

35. We observe that, to effect such a change and achieve the related public interest benefits, we would need to amend our Consumer Signal Booster rules both to: (1) eliminate the personal use restriction on Wideband Consumer Signal Boosters, and (2) prescribe a method for non-subscribers to

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<sup>71</sup> The proposed rules, as opposed to the Labeling Waivers, require alternative advisory language for embedded signal boosters and that this advisory be provided to consumers when they register their vehicle (in addition to in any materials provided at vehicle delivery).

register a Consumer Signal Booster (whether Provider-Specific or Wideband) with and receive the consent of all relevant wireless providers. Below we seek comment on such rule changes.

### 1. Wideband Consumer Signal Booster Personal Use Restriction

36. As we have explained, the personal use restriction guards against unauthorized operation of a signal booster on a wireless provider's network, while also providing a streamlined consent and registration process for consumers. In the Second Report and Order, we find that this risk of unauthorized operation does not exist for Provider-Specific Consumer Signal Boosters due to their very nature; it is present, however, for Wideband Consumer Signal Boosters because they can operate on spectrum licensed to multiple wireless providers.<sup>72</sup> While the personal use restriction was devised to stem this risk while providing convenience to consumers, it also effectively prevents enterprise use of Wideband Consumer Signal Boosters, thereby denying a crucial tool for improving wireless service access to a range of entities—including businesses of all sizes, public safety entities (using commercial spectrum), educational institutions, and others. To this end, we now query whether we should keep the personal use restriction in place for Wideband Consumer Signal Boosters.

37. On December 21, 2016, Wilson filed a Petition for Further Rulemaking asking the Commission to eliminate the personal use restriction on the operation of Wideband Consumer Signal Boosters and adopt a multi-provider registration requirement for Wideband Consumer Signal Boosters.<sup>73</sup> On March 3, 2017, the Wireless Telecommunications Bureau sought comment on the Wilson Petition.<sup>74</sup> Commenters responding to the *Wilson Public Notice* almost uniformly supported elimination of the personal use restriction for both types of boosters (i.e., Provider-Specific and Wideband).<sup>75</sup> They argued that Consumer Signal Boosters offer enterprises a cost-effective way to boost signal coverage for employees and customers, that expanding access to these devices will promote public safety, and that the NPS has negated any potential interference concerns.<sup>76</sup>

38. UPS describes the benefits businesses could obtain should we remove the restriction on Wideband Signal Boosters, stating that “[p]ermitting commercial enterprises like UPS to use approved Consumer Signal Boosters in the course of their business would provide both needed flexibility and cost

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<sup>72</sup> See *Further Notice*, 29 FCC Rcd at 11571, para. 26.

<sup>73</sup> Wilson Petition at 1, 9, 15-16, 19-20.

<sup>74</sup> *Wireless Telecommunications Bureau Seeks Comment on Wilson Electronics Petition for Rulemaking To Eliminate the Personal Use Restriction on Wideband Consumer Signal Boosters*, Public Notice, 32 FCC Rcd 1553, 1554 (WTB 2017) (*Wilson Public Notice*).

<sup>75</sup> See generally AHTUC Comments; ATA Comments; EWA Wilson Petition Comments; Getabetttersignal.com Comments; Global Convergence Comments; ICBA Comments; NPSTC Comments; NWSA Comments; SignalBoosters.com Comments; Sprint Comments; Staircase 3 Comments; Surecall Comments; TIA Comments; UPS Comments; API Reply; Staircase 3 Reply; UTC Reply.

We note that while T-Mobile and Nextivity reiterated their support for removing the restriction on Provider-Specific Signal Boosters, T-Mobile did not specifically address the Wilson Petition, and Nextivity urged the Commission to act immediately to eliminate the personal use restriction on Provider-Specific Consumer Signal Boosters and to conduct a separate rulemaking to address potential changes to the Wideband Consumer Signal Booster rules. See T-Mobile Wilson Petition Comments at 1-3; Nextivity Wilson Petition Reply Comments at 1-7; *Ex Parte* Letter from Michiel Lotter, CTO & Vice President, Engineering, Nextivity, and Catherine Wang, Counsel to Nextivity, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10-4, at 1, 2-8 (filed Mar. 22, 2017) (*Nextivity Ex Parte*).

<sup>76</sup> See generally AHTUC Comments; ATA Comments; EWA Wilson Petition Comments; Getabetttersignal.com Comments; Global Convergence Comments; ICBA Comments; NPSTC Comments; NWSA Comments; SignalBoosters.com Comments; Sprint Comments; Staircase 3 Comments; Surecall Comments; TIA Comments; UPS Comments; API Reply; Staircase 3 Reply; UTC Reply.

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savings in addressing the unique radio-frequency propagation requirements they may have.”<sup>77</sup> AHTUC explains that “the use of ‘off the shelf’ consumer signal boosters to improve wireless communications in small offices/locations provides an important alternative where installation of an Industrial Signal Booster is operationally or financially impractical.”<sup>78</sup> Almost all of the commenters echo these statements.<sup>79</sup>

39. Commenters also describe how access to Wideband Consumer Signal Boosters would assist public safety entities in their operations.<sup>80</sup> For example, NWSA, whose members provide emergency response to wildfires, hurricanes, and other natural disasters, indicates that communications through public wireless networks are key to the safety of its member companies’ employees and those working around them.<sup>81</sup> NWSA explains that, because much of their members’ work is in remote areas, they must be able to “utilize all resources available [to] maintain communications.”<sup>82</sup> NPSTC explains that “public safety entities, as well as business entities that use [commercial mobile radio service] systems to contact public safety, will benefit from the requested rule change” because “there are still a number of locations throughout the country where subscribers experience wireless signals that are weaker than desired,” particularly in rural areas.<sup>83</sup> In addition, NPSTC describes how those working in “buildings constructed with energy-efficient glass may experience weaker signals as those building materials can retard the passage of radio frequency signals,”<sup>84</sup> sometimes making it difficult to contact emergency services when necessary.<sup>85</sup>

40. Commenters additionally stress that, because of the effectiveness of the NPS, both types of Consumer Signal Boosters are extremely safe for wireless networks even without the personal use restriction.<sup>86</sup> Sprint states that it believes the NPS provides “sufficient protection for the proposed relaxation of the ‘personal use’ restriction to allow other entities to make use of these devices.”<sup>87</sup> Indeed, no wireless provider has filed comments stating that interference has been an issue, and, in fact, Sprint, T-Mobile, and Verizon previously have reported that interference from Consumer Signal Boosters that

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<sup>77</sup> UPS Comments at 2-3; *see also Ex Parte* Letter from Bruce Lancaster, President & CEO, Wilson Electronics, LLC, and Timothy B. Totten, Wireless Architect, United Parcel Service, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 10-4, at 1-2 (filed Feb. 1, 2017).

<sup>78</sup> AHTUC Comments at 3.

<sup>79</sup> *See* EWA Wilson Petition Comments at 2-3; ICBA Comments at 2; Getabetttersignal.com Comments at 1; Global Convergence Comments at 1; NPSTC Comments at 4-5; SignalBoosters.com Comments at 1; Sprint Wilson Petition Comments at 1-2; Staircase 3 Comments at 2; Surecall Comments at 4-5; TIA Comments at 2; API Reply at 1; UTC Reply at 3.

<sup>80</sup> *See* ATA Comments at 1; Global Convergence Comments at 1; NPSTC Comments at 4-5; NWSA Comments at 1; Surecall Comments at 5.

<sup>81</sup> NWSA Comments at 1.

<sup>82</sup> *Id.*

<sup>83</sup> NPSTC Comments at 4.

<sup>84</sup> *Id.* at 4-5.

<sup>85</sup> *See id.*

<sup>86</sup> *See* AHTUC Comments at 4; ATA Comments at 1; EWA Wilson Petition Comments at 2-3; Getabetttersignal.com Comments at 1; Global Convergence Comments at 1; NPSTC Comments at 5-6; SignalBoosters.com Comments at 1; Sprint Comments at 1-2; Surecall Comments at 4, 10; UPS Comments at 4; UTC Reply at 3-4.

<sup>87</sup> Sprint Comments at 2. Sprint also clarifies that it “does not . . . support the use of multiple consumer signal boosters to cover a large industrial, retail, or other facility, as the performance of the boosters is not optimized for such deployments and such a deployment could adversely impact the performance of Sprint’s network.” *Id.* at 2 n.4.

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meet the NPS is virtually nil.<sup>88</sup> Commenters therefore contend that, because harmful interference is not an issue due to the NPS, no technical or policy reason exists to limit the use of Wideband Consumer Signal Boosters solely to individuals for personal use.<sup>89</sup> Based on these comments, it does not appear that the personal use restriction on Wideband Consumer Signal Boosters is necessary in order to prevent unauthorized operation or to ensure compliance with applicable rules. As commenters have pointed out, compliance with the NPS requirements is central to limiting any interference from Consumer Signal Boosters, whether Provider-Specific or Wideband.

41. Nextivity stresses that, while it does not oppose the Wilson Petition, Wideband Consumer Signal Boosters are sufficiently technologically different from Provider-Specific Consumer Signal Boosters that removing the personal use restriction for Wideband boosters should be considered in its own proceeding.<sup>90</sup> Nextivity asserts that widespread use of Wideband Consumer Signal Boosters in the absence of the personal use restriction raises myriad potential performance and interference issues that need to be evaluated before such a restriction is lifted for this category of signal boosters.<sup>91</sup>

42. Based upon the success of the Consumer Signal Booster rules thus far and the record before us, we propose to eliminate the personal use restriction on Wideband Consumer Signal Boosters.<sup>92</sup> We request comment on this proposal. What are the potential benefits of eliminating the personal use restriction on Wideband Consumer Signal Boosters? Are there quantifiable economic benefits associated with this proposal? Would removal of this restriction on Wideband Consumer Signal Boosters increase the likelihood of harmful interference to wireless providers' networks? Are there, as Nextivity claims, different and possibly more extensive technical and performance issues? Are there other possible costs associated with the possible removal of the personal use restriction on Wideband Consumer Signal Boosters? How might any costs or adverse effects balance against any benefits resulting from this proposed rule change? We request that commenters provide as much documentation and detail as possible in their comments on this proposal so that we can fairly evaluate the issues.

## 2. Subscriber Relationship

43. To fully achieve our goal of expanding access to Consumer Signal Boosters for enterprise use, operators must have the flexibility to operate boosters on multiple providers' spectrum. Under our current rules, however, operators must be subscribers of the wireless provider on whose spectrum they use a Consumer Signal Booster and may register only with said provider.<sup>93</sup> To use a Wideband Consumer Signal Booster for multiple providers under our current rules, a subscriber of each provider must register that same device with each respective provider.<sup>94</sup>

44. Accordingly, even if we eliminate the personal use restriction for Wideband Consumer

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<sup>88</sup> See T-Mobile Mar. 30, 2016 Comments at 2; Verizon Mar. 30, 2016 Comments at 2; Sprint Consumer Signal Booster Filing at 2.

<sup>89</sup> See EWA Comments at 2-3; Global Convergence Comments at 1; NPSTC Comments at 1, 5-6; Surecall Comments at 6, 10-12; TIA Comments at 1; UTC Reply at 3-4.

<sup>90</sup> See generally Nextivity Wilson Petition Reply; Nextivity *Ex Parte*.

<sup>91</sup> See, e.g., Nextivity *Ex Parte* at 5-7.

<sup>92</sup> Wilson now takes the position that a further notice of proposed rulemaking is no longer necessary regarding its proposal to eliminate the personal use requirement for Wideband Consumer Signal Boosters. Wilson Reply Comments at iii, 4-6. The proposals and issues we are raising for comment in the Second Further Notice include and expand upon the matters presented in the Wilson Petition, and we have concluded that our obligations under the Administrative Procedure Act, 5 U.S.C. § 553, are served by issuance of the Second Further Notice of Proposed Rulemaking.

<sup>93</sup> See *Report and Order*, 28 FCC Rcd at 1671-73, 1675, 1677, paras. 21-25, 29-30, 35; 47 CFR § 20.21(a).

<sup>94</sup> See *Report and Order*, 28 FCC Rcd at 1681-82, 1697-98, paras. 48, 95 & n.105; 47 CFR § 20.21(a).

Signal Boosters as proposed above, enterprise users still would be unable to operate a Wideband booster across multiple providers' spectrum unless they subscribed to each provider. We therefore consider whether and how to permit non-subscribers to operate Provider-Specific or Wideband Consumer Signal Boosters. We propose a means for non-subscribers to register with and receive consent from providers to which they do not subscribe, while ensuring that providers maintain control over their networks.

45. Section 301 of the Communications Act requires a valid FCC license to operate a radio frequency transmitting device, such as a signal booster.<sup>95</sup> This statutory requirement is reflected in the Commission's rules and policies, which require an FCC license or licensee consent to operate a station in the Wireless Radio Services.<sup>96</sup> The Commission in the *Report and Order* noted that wireless providers must retain sufficient control over Consumer Signal Boosters to avoid violating Section 310(d) of the Act.<sup>97</sup> It thus authorized Consumer Signal Boosters under wireless providers' blanket licenses and required that signal booster operators be subscribers who must obtain the consent of their wireless provider and register their Consumer Signal Booster with that provider.<sup>98</sup> The Commission found that this licensing framework would "best facilitate the rapid introduction of Consumer Signal Boosters, provide a streamlined process for authorization of device operation, and enable wireless operators to maintain sufficient control of their networks."<sup>99</sup> By all accounts, this framework has worked as intended, and wireless providers have retained required control of their operations, with interference to wireless networks being almost nonexistent.

46. We propose to extend this paradigm so that a non-subscriber may operate a Consumer Signal Booster under the provider's blanket license subject to an arrangement with the provider. This arrangement would serve as a substitute for the subscriber relationship while retaining the consent and registration components of our framework. Similar to a subscriber agreement, such an arrangement could include any appropriate rights, restrictions, and obligations the provider believes it must impose on the non-subscriber. In this way, wireless providers would continue to maintain control over their licensed spectrum in compliance with Section 310(d) while enterprise users and individuals would have the flexibility to operate boosters across wireless networks, including taking advantage of any alternative approaches to facilitating the operation of Consumer Signal Boosters by non-subscribers.

47. We also propose that non-subscriber registrants would have to agree to and accept certain terms established by the wireless provider on whose spectrum the Consumer Signal Booster would operate. The details of the arrangement between the wireless provider and a non-subscriber registrant

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<sup>95</sup> 47 U.S.C. § 301.

<sup>96</sup> Our rules afford CMRS licensees blanket authority to operate an array of transmitters, including signal boosters, on their licensed spectrum without prior Commission approval. *See, e.g.*, 47 CFR § 22.165 (providing that "[a] licensee may operate additional transmitters at additional locations on the same channel or channel block as its existing system without obtaining prior Commission approval"); 47 CFR § 22.383 (authorizing licensees to "install and operate in-building radiation systems without applying for authorization or notifying the FCC, provided that the locations of the in-building radiation systems are within the protected service area of the licensee's authorized transmitter(s) on the same channel or channel block"); 47 CFR § 1.903(c) (providing that a subscriber's authority "to operate mobile or fixed stations in the Wireless Radio Services . . . is included in the authorization held by the licensee providing service to them").

<sup>97</sup> *See Report and Order*, 28 FCC Rcd at 1674-75, paras. 28-29.

<sup>98</sup> *See* 47 CFR 20.21(a) ("A subscriber in good standing of a commercial mobile radio service system may operate a Consumer Signal Booster for personal use under the authorization held by the licensee providing service to the subscriber provided that the subscriber complies with paragraphs (a)(1) through (6)."); *Report and Order*, 28 FCC Rcd at 1665, 1671-75, paras. 4, 22-29. The Commission noted that, if a provider withdraws consent to the use of a Consumer Signal Booster, any further operation would be unauthorized in violation of Section 301 of the Communications Act. *Id.* at 1675 n.71.

<sup>99</sup> *Id.* at 1671, para. 22.

generally would be left to the wireless providers to implement,<sup>100</sup> but at minimum we propose that any such arrangement must require that the registrant:<sup>101</sup>

- 1) Prior to operation, obtain the consent of the licensee for any network operating in the range of the signal booster;<sup>102</sup>
- 2) Prior to operation, register the signal booster with the licensee for any network on which the booster will be operated;
- 3) Operate the Consumer Signal Booster only with approved antennas, cables, and/or coupling devices as specified by the manufacturer of the booster;
- 4) Operate the signal booster only on frequencies used for the provision of subscriber-based services, as specified in Section 20.21(e)(3);<sup>103</sup>
- 5) Because operation of Consumer Signal Boosters is on a secondary, non-interference basis to primary services licensed for the frequency bands on which they transmit, upon request of an FCC representative or a licensee experiencing harmful interference,
  - a) Cooperate in determining the source of the interference, and
  - b) If necessary, deactivate the signal booster immediately, or as soon as practicable, if immediate deactivation is not possible;<sup>104</sup>
- 6) Use a signal booster that meets the Network Protection Standard in Section 20.21(e);<sup>105</sup>
- 7) Use a signal booster that is appropriately labeled as required by Section 20.21(f);<sup>106</sup> and
- 8) Not deactivate any features of the signal booster that are designed to prevent harmful interference to wireless networks. These features must be enabled and operating at all times that the signal booster is in use.

48. We propose that, as with registration by a subscriber, providers may not charge a registration fee.<sup>107</sup> We seek comment on these proposed terms. Are they adequate to achieve our goals? More specifically, is the requirement that operators receive consent of all providers “operating in the range of the signal booster” feasible? What costs would this requirement entail for the purchasers/operators of Consumer Signal Boosters? Should we set up a system for registrants to determine which providers are in range of their signal booster? Should the providers themselves set up such a system? Should we include any additional protections for consumers, other than requiring that providers not charge a registration fee? How could these arrangements be enforced against a non-subscriber? If a commenter suggests alternative or additional terms, or a different approach to the establishment of an arrangement between a wireless provider and a non-subscriber Consumer Signal

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<sup>100</sup> While we propose to otherwise permit providers to develop their own arrangements to help maintain control over their networks, we would expect providers to require only such terms that are reasonably related to achieving this goal.

<sup>101</sup> These terms are consistent with the language of Section 20.21(a) and serve to ensure compliance with our rules. *See* 47 CFR § 20.21(a), (d).

<sup>102</sup> We reiterate that, as with the subscriber framework, we presume that proper registration also would bestow the provider’s consent to the signal booster’s operation.

<sup>103</sup> *Id.* § 20.21(e)(3).

<sup>104</sup> *Id.* § 20.21(d).

<sup>105</sup> *Id.* § 20.21(e).

<sup>106</sup> *Id.* § 20.21(f).

<sup>107</sup> *See Report and Order*, 28 FCC Rcd at 1699, 1700-01, paras. 100, 106; *see* 47 CFR § 20.21(h).

Booster registrant, its comments should explain the purpose and feasibility of such different or additional terms, and should also address how any arrangement meets the requirements of Sections 301 and 310(d) of the Communications Act.<sup>108</sup>

49. As with the current subscriber framework, we intend that this registration process (which also would include the establishment of the relationship between the wireless provider and the non-subscriber Consumer Signal Booster operator) would constitute the provider's consent to the non-subscriber registrant's operation of the signal booster.<sup>109</sup> To be clear, the signal booster's operator would need to register with each and every provider on whose network the signal booster might operate. The registered operator would remain responsible for the signal booster as defined by our rules,<sup>110</sup> while other users could utilize the signal booster without registering. If an individual chose to operate a booster for his personal use on his subscribing provider's network, however, the individual simply would follow the current framework and register only with that provider. We seek comment on this proposed framework. Does it achieve our goals of expanding access to Consumer Signal Boosters while adequately providing licensees with control over their networks? Is there a better way to achieve this goal?

50. If we allow individuals and enterprises to register with and seek consent from wireless providers other than those to which they subscribe, we observe that we also must alter the required advisory language for Consumer Signal Boosters, specifically the statement that "BEFORE USE, you MUST REGISTER THIS DEVICE with *your* wireless provider and have *your* provider's consent. Most wireless providers consent to the use of signal boosters. Some providers may not consent to the use of this device on their network. If you are unsure, contact *your* provider."<sup>111</sup> We propose to alter this language to make clear to purchasers that any Consumer Signal Booster must be registered with one or more wireless providers and that it may not be used with any provider in the absence of their prior consent. We also propose to include language directing signal booster purchasers/operators to an FCC webpage that will guide them to determine with which provider(s) they must register and from whom they must receive consent before initiating any operation of the signal booster. We preliminarily anticipate that the FCC webpage would include tools so that a Consumer Signal Booster purchaser/operator could determine whether it needed to register with one or multiple providers and to assist the purchaser/operator in identifying which providers might be within range of the signal booster when operated. We seek comment on this proposal. Is it likely to promote compliance with our requirements for Consumer Signal Boosters or might it instead lead to purchasers, particularly individuals, ignoring the requirements? Is there a simpler way to include the required information in an advisory that accompanies the Consumer Signal Boosters? Is there a more efficient way for signal booster purchasers/operators to obtain this information?

51. We also consider what action we should take with respect to Mobile Consumer Signal Boosters<sup>112</sup> if we move forward with our overall proposal. While Mobile Consumer Signal Boosters generally are used by consumers for their personal use and only on their own provider's mobile network (e.g., in their personal car), if we modify the rules as proposed above, we can foresee other non-personal uses across multiple wireless providers' spectrum as well. For example, commercial bus or train lines

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<sup>108</sup> 47 U.S.C. § 301.

<sup>109</sup> Based upon the record, we expect that providers rarely would not approve operation of Consumer Signal Boosters that meet the NPS. Nevertheless, to the extent that providers do opt not to consent to the use of a particular signal booster model on their network, we anticipate they will do so only for the purpose of preventing a demonstrated risk of harmful interference, for example, due to field observation of devices not complying with the NPS.

<sup>110</sup> See 47 CFR §§ 20.3, 20.21(a), (d); *Report and Order*, 28 FCC Rcd at 1680, para. 43.

<sup>111</sup> 47 CFR § 20.21(f)(1)(iv)(A)(I) (emphasis added).

<sup>112</sup> See *id.* § 20.3 (defining a "Mobile Consumer Signal Booster" as "[a] Consumer Signal Booster designed to operate in a moving vehicle where both uplink and downlink transmitting antennas are at least 20 cm from the user or any other person").

that travel across multiple markets may choose to deploy a mobile booster for their passengers' use. We propose that such enterprises would be required to register their Mobile Consumer Signal Boosters with all providers within range of the signal booster, even though the number of such wireless providers may well be larger than those for a fixed signal booster, as the bus or train would be moving through multiple markets. Would imposing this registration requirement for mobile signal boosters be burdensome on entities like bus and train lines, or would it simply be considered a requirement of doing business? Is there an alternative way to address the need for registration of mobile signal boosters that would maintain the integrity of our registration and consent requirement?

52. Finally, we seek comment on whether either or both of our proposals above (to eliminate the personal use restriction for Wideband Consumer Signal Boosters and to allow non-subscribers to operate Consumer Signal Boosters on the networks of all wireless providers) require any additional rule changes. For example, would either proposal require any technical rule changes? Are enterprise users likely to place their Consumer Signal Boosters in locations that are more prone to causing interference, for example, outdoors or on top of tall buildings? Should we consider placing restrictions on where Consumer Signal Boosters may be operated?<sup>113</sup> Is there a technical reason to limit how many Consumer Signal Boosters one operator may deploy? Sprint, for example, points out that using multiple Consumer Signal Boosters to cover a large industrial, retail, or other facility is not ideal, "as the performance of the boosters is not optimized for such deployments."<sup>114</sup> Are there any other considerations we should take into account but have not?

## V. PROCEDURAL MATTERS

53. *Paperwork Reduction Act Analysis.*—The Second Report and Order does not contain new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, the Second Report and Order does not contain any new or modified information collection burdens for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. § 3506(c)(4).

54. The Second Further Notice contains proposed modified information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (OMB) to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4), we seek specific comment on how we might further reduce the information collection burden for small business concerns with fewer than 25 employees.

55. *Congressional Review Act.*—The Commission will send a copy of the Second Report and Order to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

56. *Final Regulatory Flexibility Certification.*—The Regulatory Flexibility Act of 1980, as amended (RFA),<sup>115</sup> requires that an agency prepare a regulatory flexibility analysis for notice-and-comment rulemaking proceedings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."<sup>116</sup> The Final Regulatory

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<sup>113</sup> *See, e.g.*, API Reply at 1-2 (requesting that, if the Commission eliminates the personal use restriction, we also should "include clarification that consumer booster regulations are applicable to predominantly in-building (indoor) coverage enhancements only.")

<sup>114</sup> Sprint Comments at 2 n.4.

<sup>115</sup> The RFA, *see* 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

<sup>116</sup> 5 U.S.C. § 605(b).

Flexibility Certification concerning the possible economic impact of the rule changes contained in the Second Report and Order is attached as Appendix C.

57. *Initial Regulatory Flexibility Analysis.*—As required by the RFA, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities of the rule revisions proposed in the Second Further Notice. The analysis is found in Appendix D. We request written public comment on the analysis. Comments must be filed in accordance with the same deadlines as comments filed in response to the Second Further Notice, and must have a separate and distinct heading designating them as responses to the IRFA. The Commission’s Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of the Second Further Notice, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration, in accordance with the RFA.<sup>117</sup>

58. *Ex Parte Presentations.*—This proceeding shall continue to be treated as a “permit-but-disclose” proceeding in accordance with the Commission’s *ex parte* rules.<sup>118</sup> Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter’s written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the Commission’s Electronic Comment Filing System (ECFS) available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission’s *ex parte* rules.

59. *Filing Requirements.*—Pursuant to Sections 1.415 and 1.419 of the Commission’s rules,<sup>119</sup> interested parties may file comments and reply comments concerning the Second Further Notice on or before the dates indicated on the first page of this document. Comments may be filed using ECFS.<sup>120</sup>

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: <http://apps.fcc.gov/ecfs/>.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing.
- Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission’s Secretary, Office of the Secretary, Federal Communications Commission.

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<sup>117</sup> *Id.* § 605(b).

<sup>118</sup> 47 CFR §§ 1.1200 *et seq.*

<sup>119</sup> *Id.* §§ 1.415, 1.419.

<sup>120</sup> See *Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121-01 (1998).

- All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12<sup>th</sup> St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of *before* entering the building.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12<sup>th</sup> Street, SW, Washington DC 20554.

60. *People with Disabilities.* To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to [fcc504@fcc.gov](mailto:fcc504@fcc.gov) or call the Consumer and Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

61. *Availability of Documents.* Comments, reply comments, and *ex parte* submissions will be publicly available online via ECFS.<sup>121</sup> These documents will also be available for public inspection during regular business hours in the FCC Reference Information Center, which is located in Room CY-A257 at FCC Headquarters, 445 12th Street, SW, Washington, DC 20554. The Reference Information Center is open to the public Monday through Thursday from 8:00 a.m. to 4:30 p.m. and Friday from 8:00 a.m. to 11:30 a.m.

62. *Contact Information.*—For further information regarding the Second Report and Order and Second Further Notice of Proposed Rulemaking, contact Amanda Huetinck at (202) 418-7090 or [amanda.huetinck@fcc.gov](mailto:amanda.huetinck@fcc.gov).

## VI. ORDERING CLAUSES

63. Accordingly, IT IS ORDERED, pursuant to Sections 1, 4(i), 4(j), 7, 301, 302, and 303 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 154(j), 157, 301, 302, and 303, that this Second Report and Order and Second Further Notice of Proposed Rulemaking in WT Docket No. 10-4 IS ADOPTED.

64. IT IS FURTHER ORDERED that Part 20 of the Commission's rules, 47 CFR Part 20, IS AMENDED as specified in Appendix A.

65. IT IS FURTHER ORDERED that the rules adopted herein WILL BECOME EFFECTIVE 30 days after the date of publication in the Federal Register.

66. IT IS FURTHER ORDERED that, pursuant to applicable procedures set forth in Sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments on the Second Further Notice of Proposed Rulemaking on or before 30 days after publication in the *Federal Register* and reply comments on or before 60 days after publication in the *Federal Register*.

67. IT IS FURTHER ORDERED that, pursuant to Section 801(a)(1)(A) of the Congressional Review Act, 5 U.S.C. § 801(a)(1)(A), the Commission SHALL SEND a copy of the Second Report and Order and Second Further Notice of Proposed Rulemaking to Congress and to the Government Accountability Office.

68. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of the Second Report and Order and Second Further Notice of Proposed Rulemaking, including the Final Regulatory Flexibility Certification and the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

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<sup>121</sup> Documents will generally be available electronically in ASCII, Microsoft Word, and/or Adobe Acrobat.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch  
Secretary



## APPENDIX A

## Final Rules

**Part 20 of Title 47 of the Code of Federal Regulations is amended as follows:**

**PART 20—COMMERCIAL MOBILE RADIO SERVICES**

1. Amend § 20.3 by revising the definition of *Consumer Signal Booster* to read as follows:

**§ 20.3 Definitions.**

*Consumer Signal Booster:* A bi-directional signal booster that is marketed and sold for use without modification.

2. Amend § 20.21 by revising introductory text of paragraph (a), by adding paragraph (a)(7), and by revising paragraph (g) to read as follows:

**§ 20.21 Signal boosters.**

(a) *Operation of Consumer Signal Boosters.* A subscriber in good standing of a commercial mobile radio service system may operate a Consumer Signal Booster under the authorization held by the licensee providing service to the subscriber provided that the subscriber complies with paragraphs (a)(1) through (a)(7) below. Failure to comply with all applicable rules in this section and all applicable technical rules for the frequency band(s) of operation voids the authority to operate the Consumer Signal Booster.

\* \* \* \* \*

(7) If operating a Wideband Consumer Signal Booster, the subscriber operates it only for personal use.

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(g) *Marketing and Sale of Signal Boosters.* Except as provided in § 2.803 of this chapter, no person, manufacturer, distributor, or retailer may market (as defined in § 2.803 of this chapter) any Consumer Signal Booster that does not comply with the requirements of this section to any person in the United States or to any person intending to operate the Consumer Signal Booster within the United States. Wideband Consumer Signal Boosters may only be sold to members of the general public for their personal use.

\* \* \* \* \*

**APPENDIX B****Proposed Rules**

**Part 20 of Title 47 of the Code of Federal Regulations is amended as follows:**

**PART 20—COMMERCIAL MOBILE RADIO SERVICES**

1. Amend § 20.21 by revising paragraphs (a), (f), (g), (h) to read as follows:

**§ 20.21 Signal boosters.***(a) Operation of Consumer Signal Boosters.*

(1) *For personal use by a subscriber.* A subscriber in good standing of a commercial mobile radio service system may operate a Consumer Signal Booster under the authorization held by the licensee providing service to the subscriber, provided that the subscriber complies with paragraphs (a)(1)(i) through (a)(1)(vi) below. Failure to comply with all applicable rules in this section and all applicable technical rules for the frequency band(s) of operation voids the authority to operate the Consumer Signal Booster.

(i) Prior to operation, the subscriber obtains the consent of the licensee providing service to the subscriber;

(ii) Prior to operation, the subscriber registers the Consumer Signal Booster with the licensee providing service to the subscriber;

(iii) The subscriber only operates the Consumer Signal Booster with approved antennas, cables, and/or coupling devices as specified by the manufacturer of the Consumer Signal Booster;

(iv) The subscriber operates the Consumer Signal Booster on frequencies used for the provision of subscriber-based services as specified by paragraph (e)(3) of this section;

(v) The Consumer Signal Booster complies with paragraphs (e), (f), (g), and (h) of this section and § 2.907 of this chapter; and

(vi) The subscriber may not deactivate any features of the Consumer Signal Booster that are designed to prevent harmful interference to wireless networks. These features must be enabled and operating at all times the signal booster is in use.

(2) *For non-personal use.* An individual or non-individual may operate a Consumer Signal Booster under the authorization held by the licensee(s) of the spectrum on which the Consumer Signal Booster operates, provided that the operator complies with paragraphs (a)(2)(i) through (a)(2)(vi) below. Failure to comply with all applicable rules in this section and all applicable technical rules for the frequency band(s) of operation voids the authority to operate the Consumer Signal Booster.

(i) Prior to operation, the operator obtains the consent of the licensee(s) of the spectrum on which the Consumer Signal Booster operates;

(ii) Prior to operation, the operator registers the Consumer Signal Booster with the licensee(s) of the spectrum on which the Consumer Signal Booster operates;

(iii) The operator only operates the Consumer Signal Booster with approved antennas, cables, and/or coupling devices as specified by the manufacturer of the Consumer Signal Booster;

(iv) The operator operates the Consumer Signal Booster on frequencies used for the provision of subscriber-based services as specified by paragraph (e)(3) of this section;

(v) The Consumer Signal Booster complies with paragraphs (e), (f), (g), and (h) of this section and § 2.907 of this chapter; and

(vi) The operator may not deactivate any features of the Consumer Signal Booster that are designed to prevent harmful interference to wireless networks. These features must be enabled and operating at all times the signal booster is in use.

\* \* \* \* \*

*(f) Signal Booster Labeling Requirements.*

(1) Consumer Signal Boosters.

(i) Consumer Signal Booster manufacturers, distributors, and retailers must ensure that all signal boosters include the following advisory:

This is a CONSUMER device.

BEFORE USE, you MUST REGISTER THIS DEVICE with the appropriate wireless provider(s) and have that provider's consent. Most wireless providers consent to the use of signal boosters. Some providers may not consent to the use of this device on their network. Please visit [www.fcc.gov/X](http://www.fcc.gov/X) to determine the provider(s) with which you must register and from which you must receive consent.

You MUST operate this device with approved antennas and cables as specified by the manufacturer. Antennas MUST be installed at least 20 cm (8 inches) from any person.

You MUST cease operating this device immediately if requested by the FCC or a licensed wireless service provider.

WARNING. E911 location information may not be provided or may be inaccurate for calls served by using this device.

(ii) The label for Consumer Signal Boosters certified for fixed indoor operation also must include the following language:

This device may be operated ONLY in a fixed location for in-building use.

(iii) These advisories must be included:

(A) In on-line, point-of-sale marketing materials,

(B) In any owner's manual and installation instructions (whether in print or on-line),

(C) On the outside packaging of the device, and

(D) On a label affixed to the device.

(iv) In lieu of the requirements of subparagraphs (i), (iii)(C)-(D) above, vehicle manufacturers, vehicle distributors, and vehicle retailers of vehicles with embedded Consumer Signal Boosters must use the following alternative advisory in any materials provided at vehicle delivery and when the consumer registers the vehicle with the vehicle manufacturer:

This vehicle contains a CONSUMER SIGNAL BOOSTER device.

BEFORE USE, you MUST REGISTER THIS SIGNAL BOOSTER DEVICE with the appropriate wireless provider(s) and have that provider's consent. Most wireless providers consent to the use of signal boosters. Some providers may not consent to the use of this device on their network. Please visit [www.fcc.gov/X](http://www.fcc.gov/X) to determine with which provider(s) you must register and from which you must receive consent.

If a wireless provider does not consent to the use of this device on its network, or if you are directed to cease operating the device by the FCC or a licensed wireless service provider, you MUST [*manufacturer, distributor, and/or retailer insert instruction to consumer*].

WARNING. E911 location information may not be provided or may be inaccurate for calls served by using this device.

(v) A Consumer Signal Booster label may contain an acknowledgement that particular provider(s) have given their consent for all consumers to use the device. Such an acknowledgement shall be inserted prior to, "Some providers may not consent to the use of this device on their network." The remaining language of the advisory shall remain the same.

## (2) Industrial Signal Boosters.

(i) Industrial Signal Booster manufacturers, distributors, and retailers must ensure that all signal boosters, include the following advisory:

WARNING. This is NOT a CONSUMER device. It is designed for installation by FCC LICENSEES and QUALIFIED INSTALLERS. You MUST have an FCC LICENSE or express consent of an FCC Licensee to operate this device. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of \$100,000 for each continuing violation.

\* \* \* \* \*

(g) *Marketing and Sale of Signal Boosters.* Except as provided in § 2.803 of this chapter, no person, manufacturer, distributor, or retailer may market (as defined in § 2.803 of this chapter) any Consumer Signal Booster that does not comply with the requirements of this section to any person in the United States or to any person intending to operate the Consumer Signal Booster within the United States.

## (h) *Registration.*

(1) Each licensee consenting to the operation of a Consumer Signal Booster must establish a free registration mechanism for subscribers and non-subscribers and register all Consumer Signal Boosters to which it consents. A licensee must establish a registration mechanism within 90 days of consenting to the operation of a Consumer Signal Booster. At a minimum, a licensee must collect:

- (i) the name of the Consumer Signal Booster owner and/or operator, if different individuals;
- (ii) the make, model, and serial number of the device;

- (iii) the location of the device; and
  - (iv) the date of initial operation. Licensee consent is voluntary and may be withdrawn at the licensee's discretion.
- (2) In addition, for any non-subscriber registration, at a minimum, the registrant must:
- (i) Prior to operation, obtain the consent of the licensee for any network operating in the range of the signal booster;
  - (ii) Prior to operation, register the signal booster with the licensee for any network on which the booster will be operated;
  - (iii) Operate the Consumer Signal Booster only with approved antennas, cables, and/or coupling devices as specified by the manufacturer of the booster;
  - (iv) Operate the signal booster only on frequencies used for the provision of subscriber-based services, as specified by paragraph (e)(3) of this section;
  - (v) Because operation of Consumer Signal Boosters is on a secondary, non-interference basis to primary services licensed for the frequency bands on which they transmit, upon request of an FCC representative or a licensee experiencing harmful interference,
    - (a) Cooperate in determining the source of the interference, and
    - (b) If necessary, deactivate the signal booster immediately, or as soon as practicable, if immediate deactivation is not possible;
  - (vi) Use a signal booster that meets the Network Protection Standard as required by paragraph (e) of this section;
  - (vii) Use a signal booster that is appropriately labeled as required by paragraph (f) of this section; and
  - (viii) Not deactivate any features of the signal booster that are designed to prevent harmful interference to wireless networks. These features must be enabled and operating at all times the signal booster is in use.

## APPENDIX C

## Final Regulatory Flexibility Certification

1. The Regulatory Flexibility Act of 1980, as amended (RFA),<sup>1</sup> requires that a regulatory flexibility analysis be prepared for notice-and-comment rule making proceedings, unless the agency certifies that “the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.”<sup>2</sup> The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”<sup>3</sup> In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.<sup>4</sup> A “small business concern” 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 Small Business Administration (SBA).<sup>5</sup>

2. The Commission launched this proceeding in 2010 to “broaden the availability of signal boosters while ensuring that boosters do not adversely affect wireless networks.”<sup>6</sup> With the goal of expanding consumer access to signal boosters,<sup>7</sup> in the Further Notice of Proposed Rulemaking (*Further Notice*) the Commission sought written comment, on whether to remove the “personal use” restriction on the operation of Provider-Specific Consumer Signal Boosters.<sup>8</sup> The Commission questioned the need for the restriction because with Provider-Specific Consumer Signal Boosters, the device operates only on a single provider’s spectrum and the consumer will have obtained consent from and be registered with that single provider, so any transmissions from the Signal Booster are therefore authorized.<sup>9</sup> Additionally, in the *Further Notice*, the Commission certified that the proposed removal of the “personal use” restriction would not have a significant economic impact on a substantial number of small entities.<sup>10</sup>

3. In the *Second Report and Order*, the Commission takes further steps to expand access to signal boosters by removing the personal use restriction on Provider-Specific Consumer Signal Boosters,

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

<sup>2</sup> 5 U.S.C. § 605(b).

<sup>3</sup> *Id.* § 601(6).

<sup>4</sup> *Id.* § 601(3) (incorporating by reference the definition of “small-business concern” in the Small Business Act, 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.”

<sup>5</sup> 15 U.S.C. § 632.

<sup>6</sup> The Commission initiated this proceeding in January 2010 by issuing a Public Notice seeking comment on a number of petitions that sought changes to our rules for signal boosters. *Wireless Telecommunications Bureau Seeks Comment on Petitions Regarding the Use of Signal Boosters and Other Signal Amplification Techniques Used With Wireless Services*, Public Notice, 25 FCC Rcd 68 (2010).

<sup>7</sup> Consumer Signal Boosters are devices that are designed to be used “out of the box” by individuals to improve their wireless coverage within a limited area such as a home, car, boat, or recreational vehicle. *Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission’s Rules to Improve Wireless Coverage Through the Use of Signal Boosters*, Report and Order, 28 FCC Rcd 1663, 1665, para. 4 (2013) (*Report and Order*).

<sup>8</sup> *Amendment of Parts 1, 2, 22, 24, 27, 90 and 95 of the Commission’s Rules to Improve Wireless Coverage Through the Use of Signal Boosters*, Order on Reconsideration and Further Notice of Proposed Rulemaking, 29 FCC Rcd 11563, 11570 (2014) (*Further Notice*).

<sup>9</sup> *Id.* at 11571, para. 27.

<sup>10</sup> *Id.* at 11572, para. 34.

thereby allowing small businesses, public safety entities, and other organizations to take advantage of the signal boosters' benefits. Specifically, whereas the existing rules restricted Provider-Specific Consumer Signal Boosters to personal use, the Commission will now permit any subscriber—an individual or a non-individual—with a proper registration to use these boosters. This approach will have cognizable public interest benefits by permitting more entities to take advantage of the recognized benefits of Provider-Specific Consumer Signal Boosters.

4. The rule change we adopt today is designed to facilitate broader access to signal boosters and is overwhelmingly supported by the commenting parties in the proceeding. We believe the change will not have an adverse economic impact on small entities and will prove to be beneficial to all parties affected by the proceeding. Moreover, the modification does not impose increased reporting burdens on signal booster manufacturers or cellular providers; nor do we expect the rule change to result in increased costs for such businesses. Small businesses may choose to purchase signal boosters in the wake of the rules we adopt today, and thereby become subject to regulations related to their use. We note that indirect costs and any regulatory burdens resulting from the purchase and operation of Consumer Signal Boosters fall outside of the scope of the RFA. Therefore, we certify that the rule change adopted in the *Second Report and Order* will not have a significant economic impact on a substantial number of small entities.

## APPENDIX D

## Initial Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),<sup>1</sup> the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in the *Second Further Notice of Proposed Rulemaking (Second Further Notice)*. Written comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Second Further Notice*. The Commission will send a copy of the *Second Further Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).<sup>2</sup> In addition, the *Second Further Notice* and IRFA (or summaries thereof) will be published in the *Federal Register*.<sup>3</sup>

**A. Need for, and Objectives of, the Proposed Rules**

2. The *Second Further Notice* seeks comment on a range of possible actions that are expected to advance the Commission's goal of enhancing wireless coverage for consumers, particularly in rural, underserved, and difficult-to-serve areas, by broadening the availability of signal boosters while ensuring that boosters do not adversely affect wireless networks. In preceding actions in this docket, the Commission has adopted rules creating a regulatory framework to allow consumers to realize the benefits of using signal boosters while preventing, controlling, and, if necessary, resolving interference to wireless networks.

3. To date, the record indicates that the signal booster rules appear to have functioned as designed. For example, Wilson Electronics, LLC, a consumer signal booster manufacturer, reported just over a year ago that, "[s]ince the [Network Protection Standard] went into effect, [it] has shipped more than 750,000 Commission-approved consumer boosters and received no reports that any of its boosters caused interference to a wireless network."<sup>4</sup> Surecall, another consumer signal booster manufacturer, and Sprint, Verizon, and T-Mobile have reported no significant interference problems caused by consumer signal boosters.<sup>5</sup>

4. To ensure that Consumer Signal Boosters continue to meet the needs of American consumers, no matter what type of mobile device they use or on what band(s) that device operates, the *Second Further Notice* seeks comment on whether and how the Commission can expand the number of spectrum bands for which Consumer Signal Boosters are authorized. After enumerating relevant considerations affecting our assessment (whether the band is used to provide services to consumers or other non-licensee users such as public safety responders using commercial spectrum; whether a meaningful number of the licensees in the band will consent to Consumer Signal Booster operation; the impact of other technologies and operations both within the band and in adjacent bands and whether Consumer Signal Booster operation would harm other users within the band or in adjacent bands (and vice versa); and whether the current technical rules for signal boosters must be adjusted to accommodate any new service bands), the *Second Further Notice* seeks comment on whether the Commission should

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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 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

<sup>2</sup> See 5 U.S.C. § 603(a).

<sup>3</sup> See *id.*

<sup>4</sup> Wilson Electronics, LLC, Petition for Further Rulemaking, WT Docket No. 10-4, at iv (filed Dec. 21, 2016) (Wilson Petition).

<sup>5</sup> Surecall Comments on Wilson Petition at 2 (filed Mar. 23, 2017); Sprint Consumer Signal Booster Information at 2 (filed Mar. 8, 2016); Verizon Comments at 2 (filed Mar. 30, 2016); T-Mobile Comments at 2 (filed Mar. 30, 2016).



authorize the operation of Consumer Signal Boosters in the 600 MHz (617-652 MHz and 663-698 MHz), WCS (2305-2320 MHz and 2345-2360 MHz), and BRS/EBS (2496-2690 MHz) bands. We also ask if, in light of the considerations we identified, there are other bands we should consider adding to our Consumer Signal Booster rules.

5. Although the Commission sought to adopt Consumer Signal Booster Rules sufficiently flexible to accommodate a variety of uses, it has become clear that businesses that wish to embed Consumer Signal Boosters within vehicles have been stymied by our rules—specifically, the requirement that consumer advisories be placed on the outside packaging of the device and on a label affixed to the device. With an embedded device—placed, for example, in a car, boat, or recreational vehicle—the device is out of view of the consumer, and the consumer would not be able to see an advisory placed on the outside packing of the device or on a label affixed to the device. In light of the evolving use of Consumer Signal Boosters and our desire to encourage technological innovation, we propose to amend our rules to allow an alternative to providing the advisory on the device and its packaging. We thus propose that manufacturers, distributors, and retailers of embedded Consumer Signal Boosters instead provide the required advisory information in any materials provided at vehicle delivery as well as in any on-line, point-of-sale marketing materials as well as in any print or on-line owner’s manual. Under our proposal, the alternative advisory would provide the same warnings to consumers—that they must register the embedded signal booster with and receive the consent of the appropriate wireless provider(s).<sup>6</sup> To provide maximum flexibility to manufacturers, distributors, and retailers of vehicles with embedded signal boosters while still ensuring compliance with the requirements applicable to all Consumer Signal Boosters, we propose to permit them to both craft their own processes for their consumers to disable the device and insert a description of that process into the advisory.

6. The *Second Further Notice* considers whether and how to expand the rules’ flexibility to permit different types of enterprise entities to take full advantage of the benefits of Consumer Signal Boosters, while continuing to ensure that all signal boosters function safely on those networks and without causing interference. Specifically, we examine whether and how to enable enterprises (and individuals) to operate either type of Consumer Signal Booster on a provider’s spectrum for which it does not subscribe. To effect such a change and achieve the related public interest benefits, we propose to amend our Consumer Signal Booster rules both to: (1) eliminate the personal use restriction on Wideband Consumer Signal Boosters (similar to the action take in the *Second Report and Order* with respect to Provider-Specific Consumer Signal Boosters); and (2) prescribe a method for non-subscribers to register a Consumer Signal Booster (whether Provider-Specific or Wideband) with and receive the consent of all relevant wireless providers. Under the current Consumer Signal Booster rules, a range of entities—including businesses of all sizes, public safety entities using commercial spectrum, educational institutions, and others—are denied the benefits of using Consumer Signal Boosters to improve access to wireless services. Commenters on the Wilson Petition enumerated a range of benefits for a variety of entities and member of the public if we were to eliminate the personal use restriction on Wideband Consumer Signal Boosters. It appears that many of the same entities, as well as members of the public, would benefit from the Commission’s proposal to permit non-subscribers to register and receive consent from providers to which they do not subscribe.

## **B. Legal Basis**

7. The legal basis for any action that may be taken pursuant to the *Second Further Notice* is contained in Sections 1, 4(i), 4(j), 7, 301, 302, and 303 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 154(j), 157, 301, 302, and 303.

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<sup>6</sup> See 47 CFR § 20.21(a)(1), (2).

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

8. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.<sup>7</sup> The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”<sup>8</sup> In addition, the term “small business” has the same meaning as the term “small-business concern” under the Small Business Act.<sup>9</sup> A “small-business concern” 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>10</sup>

9. *Small Businesses, Small Organizations, Small Governmental Jurisdictions.* Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three broad groups of small entities that could be directly affected herein.<sup>11</sup> First, while there are industry-specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the SBA’s Office of Advocacy, in general a small business is an independent business having fewer than 500 employees.<sup>12</sup> These types of small businesses represent 99.9% of all businesses in the United States, which translates to 28.8 million businesses.<sup>13</sup>

10. Next, the type of small entity described as a “small organization” is generally “any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.”<sup>14</sup> Nationwide, as of August 2016, there were approximately 356,494 small organizations based on registration and tax data filed by nonprofits with the Internal Revenue Service (IRS).<sup>15</sup>

11. Finally, the small entity described as a “small governmental jurisdiction” is defined generally as “governments of cities, counties, towns, townships, villages, school districts, or special

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<sup>7</sup> 5 U.S.C. § 603(b)(3).

<sup>8</sup> *Id.* § 601(6).

<sup>9</sup> *Id.* § 601(3) (incorporating by reference the definition of “small-business concern” in the Small Business Act, 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.”

<sup>10</sup> 15 U.S.C. § 632.

<sup>11</sup> *See* 5 U.S.C. § 601(3)-(6).

<sup>12</sup> *See* SBA, Office of Advocacy, “Frequently Asked Questions, Question 1 – What is a small business?,” [https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016\\_WEB.pdf](https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016_WEB.pdf) (June 2016).

<sup>13</sup> *See* SBA, Office of Advocacy, “Frequently Asked Questions, Question 2- How many small businesses are there in the U.S.?,” [https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016\\_WEB.pdf](https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016_WEB.pdf) (June 2016).

<sup>14</sup> 5 U.S.C. § 601(4).

<sup>15</sup> Data from the Urban Institute, National Center for Charitable Statistics (NCCS) reporting on nonprofit organizations registered with the IRS were used to estimate the number of small organizations. Reports generated using the NCCS online database indicated that as of August 2016 there were 356,494 registered nonprofits with total revenues of less than \$100,000. Of this number, 326,897 entities filed tax returns with 65,113 registered nonprofits reporting total revenues of \$50,000 or less on the IRS Form 990-N for Small Exempt Organizations and 261,784 nonprofits reporting total revenues of \$100,000 or less on some other version of the IRS Form 990 within 24 months of the August 2016 data release date. *See* <http://nccs.urban.org/sites/all/nccs-archive/html/tablewiz/tw.php> where the report showing these data can be generated by selecting the following data fields: Report: “The Number and Finances of All Registered 501(c) Nonprofits”; Show: “Registered Nonprofits”; By: “Total Revenue Level (years 1995, Aug to 2016, Aug)”; and For: “2016, Aug” then selecting “Show Results”.

(continued....)

districts, with a population of less than fifty thousand.”<sup>16</sup> U.S. Census Bureau data from the 2012 Census of Governments<sup>17</sup> indicate that there were 90,056 local governmental jurisdictions consisting of general purpose governments and special purpose governments in the United States.<sup>18</sup> Of this number, there were 37,132 general purpose governments (county,<sup>19</sup> municipal, and town or township<sup>20</sup>) with populations of less than 50,000 and 12,184 special purpose governments (independent school districts<sup>21</sup> and special districts<sup>22</sup>) with populations of less than 50,000. The 2012 U.S. Census Bureau data for most types of governments in the local government category show that the majority of these governments have populations of less than 50,000.<sup>23</sup> Based on this data, we estimate that at least 49,316 local government jurisdictions fall in the category of “small governmental jurisdictions.”<sup>24</sup>

12. *Wireless Telecommunications Carriers (except Satellite)*. This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless internet access, and

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<sup>16</sup> 5 U.S.C. § 601(5).

<sup>17</sup> See 13 U.S.C. § 161. The Census of Government is conducted every five (5) years compiling data for years ending with “2” and “7”. See also Program Description Census of Government, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=program&id=program.en.COG#>.

<sup>18</sup> See U.S. Census Bureau, 2012 Census of Governments, Local Governments by Type and State: 2012 - United States-States, <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG02.US01>. Local governmental jurisdictions are classified in two categories—General purpose governments (county, municipal and town or township) and Special purpose governments (special districts and independent school districts).

<sup>19</sup> See U.S. Census Bureau, 2012 Census of Governments, County Governments by Population-Size Group and State: 2012 - United States-States, <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG06.US01>. There were 2,114 county governments with populations of less than 50,000.

<sup>20</sup> See U.S. Census Bureau, 2012 Census of Governments, Subcounty General-Purpose Governments by Population-Size Group and State: 2012 - United States – States, <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG07.US01>. There were 18,811 municipal and 16,207 town and township governments with populations less than 50,000.

<sup>21</sup> See U.S. Census Bureau, 2012 Census of Governments, Elementary and Secondary School Systems by Enrollment-Size Group and State: 2012 - United States-States, <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG11.US01>. There were 12,184 independent school districts with enrollment populations less than 50,000.

<sup>22</sup> See U.S. Census Bureau, 2012 Census of Governments, Special District Governments by Function and State: 2012 - United States-States, <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG09.US01>. The U.S. Census Bureau data do not provide a population breakout for special district governments.

<sup>23</sup> See U.S. Census Bureau, 2012 Census of Governments, County Governments by Population-Size Group and State: 2012 - United States-States, <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG06.US01>; Subcounty General-Purpose Governments by Population-Size Group and State: 2012 - United States–States, <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG07.US01>; and Elementary and Secondary School Systems by Enrollment-Size Group and State: 2012 - United States-States, <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG11.US01>. While U.S. Census Bureau data do not provide a population breakout for special district governments, if the population of less than 50,000 for this category of local government is consistent with the other types of local governments, the majority of the 38,266 special district governments have populations of less than 50,000.

<sup>24</sup> *Id.*

wireless video services.<sup>25</sup> The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees.<sup>26</sup> For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year.<sup>27</sup> Of this total, 955 firms had employment of 999 or fewer employees and 12 had employment of 1000 employees or more.<sup>28</sup> Thus, under this category and the associated size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities.

13. *600 MHz Band.* This service can be used for fixed and mobile flexible uses. The Commission defined “small business” for the 600 MHz band auction as an entity with average gross revenues not exceeding \$55 million for each of the three preceding years, and a “very small business” as an entity with average gross revenues not exceeding \$20 million for each of the three preceding years.<sup>29</sup> The SBA has approved these small business size standards.<sup>30</sup> In the Commission’s auction for geographic area licenses in the 600 MHz Band, there were 13 winning bidders that qualified as “very small business” entities, and two that qualified as a “small business” entity. As of February 14, 2018, the Commission has issued licenses in the 600 MHz Band to 54 entities, nine of which qualified as “very small business” entities, and one that qualified as a “small business” entity.

14. *Wireless Communications Service (2305-2320 MHz and 2345-2360 MHz).* This service can be used for fixed, mobile, radiolocation, and digital audio broadcasting satellite uses. The Commission defined “small business” for the wireless communications service (WCS) auction as an entity with average gross revenues of \$40 million for each of the three preceding years, and a “very small business” as an entity with average gross revenues of \$15 million for each of the three preceding years.<sup>31</sup> The SBA has approved these small business size standards.<sup>32</sup> In the Commission’s auction for geographic area licenses in the WCS, there were seven winning bidders that qualified as “very small business” entities, and one that qualified as a “small business” entity. At present, one entity that is neither a “small business” nor a “very small business” holds 155 of the 159 WCS licenses. The other four WCS licenses are held by a different entity that also does not appear to qualify as either a “small business” or a “very small business.”

15. *Broadband Radio Service and Educational Broadband Service.* Broadband Radio Service systems, previously referred to as Multipoint Distribution Service (MDS) and Multichannel Multipoint Distribution Service (MMDS) systems, and “wireless cable,” transmit video programming to

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<sup>25</sup> U.S. Census Bureau, 2012 NAICS Definitions, “517210 Wireless Telecommunications Carriers (Except Satellite).” See <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.517210>.

<sup>26</sup> 13 CFR § 121.201, NAICS code 517210.

<sup>27</sup> U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ5, Information: Subject Series: Estab and Firm Size: Employment Size of Firms for the U.S.: 2012 NAICS Code 517210 (rel. Jan. 8, 2016), [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/51SSSZ5//naics~517210](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517210).

<sup>28</sup> *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with “1000 employees or more.”

<sup>29</sup> 47 CFR § 27.1301(a).

<sup>30</sup> See Letter from Maria Contreras-Sweet, Administrator, SBA, to Gary D. Michaels, Deputy Chief, Auctions and Spectrum Access Analysis Division, Wireless Telecommunications Bureau, FCC (Aug. 21, 2014); Letter from Maria Contreras-Sweet, Administrator, SBA, to Gary D. Michaels, Deputy Chief, Auctions and Spectrum Access Analysis Division, Wireless Telecommunications Bureau, FCC (Jan. 12, 2016).

<sup>31</sup> *Amendment of the Commission’s Rules to Establish Part 27, the Wireless Communications Service (WCS)*, Report and Order, 12 FCC Rcd 10785, 10879, para. 194 (1997).

<sup>32</sup> See Letter from Aida Alvarez, Administrator, SBA, to Amy Zoslov, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, FCC (filed Dec. 2, 1998) (*Alvarez Letter 1998*).

subscribers and provide two-way high-speed data operations using the microwave frequencies of the Broadband Radio Service (BRS) and Educational Broadband Service (EBS) (previously referred to as the Instructional Television Fixed Service (ITFS)).<sup>33</sup>

16. *BRS.* In connection with the 1996 BRS auction, the Commission established a small business size standard as an entity that had annual average gross revenues of no more than \$40 million in the previous three calendar years.<sup>34</sup> The BRS auctions resulted in 67 successful bidders obtaining licensing opportunities for 493 Basic Trading Areas (BTAs). Of the 67 auction winners, 61 met the definition of a small business. BRS also includes licensees of stations authorized prior to the auction. At this time, we estimate that of the 61 small business BRS auction winners, 48 remain small business licensees. In addition to the 48 small businesses that hold BTA authorizations, there are approximately 392 incumbent BRS licensees that are considered small entities.<sup>35</sup> After adding the number of small business auction licensees to the number of incumbent licensees not already counted, we find that there are currently approximately 440 BRS licensees that are defined as small businesses under either the SBA or the Commission's rules.

17. In 2009, the Commission conducted Auction 86, the sale of 78 licenses in the BRS areas.<sup>36</sup> The Commission offered three levels of bidding credits: (i) a bidder with attributed average annual gross revenues that exceed \$15 million and do not exceed \$40 million for the preceding three years (small business) received a 15 percent discount on its winning bid; (ii) a bidder with attributed average annual gross revenues that exceed \$3 million and do not exceed \$15 million for the preceding three years (very small business) received a 25 percent discount on its winning bid; and (iii) a bidder with attributed average annual gross revenues that do not exceed \$3 million for the preceding three years (entrepreneur) received a 35 percent discount on its winning bid.<sup>37</sup> Auction 86 concluded in 2009 with the sale of 61 licenses.<sup>38</sup> Of the ten winning bidders, two bidders that claimed small business status won 4 licenses; one bidder that claimed very small business status won three licenses; and two bidders that claimed entrepreneur status won six licenses.

18. *EBS.* Educational Broadband Service has been included within the broad economic census category and SBA size standard for Wired Telecommunications Carriers since 2007. Wired Telecommunications Carriers are comprised of establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies.”<sup>39</sup> The

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<sup>33</sup> *Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service and Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, Report and Order, 10 FCC Rcd 9589, 9593, para. 7 (1995).

<sup>34</sup> 47 CFR § 21.961(b)(1).

<sup>35</sup> 47 U.S.C. § 309(j). Hundreds of stations were licensed to incumbent MDS licensees prior to implementation of Section 309(j) of the Communications Act of 1934, 47 U.S.C. § 309(j). For these pre-auction licenses, the applicable standard is SBA's small business size standard of 1500 or fewer employees.

<sup>36</sup> *Auction of Broadband Radio Service (BRS) Licenses, Scheduled for October 27, 2009, Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 86*, Public Notice, 24 FCC Rcd 8277 (2009).

<sup>37</sup> *Id.* at 8296, para. 73.

<sup>38</sup> *Auction of Broadband Radio Service Licenses Closes, Winning Bidders Announced for Auction 86, Down Payments Due November 23, 2009, Final Payments Due December 8, 2009, Ten-Day Petition to Deny Period*, Public Notice, 24 FCC Rcd 13572 (2009).

<sup>39</sup> U.S. Census Bureau, 2017 NAICS Definitions, “517311 Wired Telecommunications Carriers,” (partial definition), <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

SBA's small business size standard for this category is all such firms having 1,500 or fewer employees.<sup>40</sup> U.S. Census data for 2012 show that there were 3,117 firms that operated that year.<sup>41</sup> Of this total, 3,083 operated with fewer than 1,000 employees.<sup>42</sup> Thus, under this size standard, the majority of firms in this industry can be considered small. In addition to Census Bureau data, Commission data indicate that there are presently 2,436 EBS licensees. All but 100 of these licenses are held by educational institutions. Educational institutions are included in this analysis as small entities.<sup>43</sup> Thus, we estimate that at least 2,336 EBS licensees are small businesses based on Commission data.

19. *Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing.* This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment.<sup>44</sup> Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.<sup>45</sup> The SBA has established a small business size standard for this industry of 1,250 employees or less.<sup>46</sup> U.S. Census Bureau data for 2012 show that 841 establishments operated in this industry in that year.<sup>47</sup> Of that number, 828 establishments operated with fewer than 1,000 employees, 7 establishments operated with between 1,000 and 2,499 employees, and 6 establishments operated with 2,500 or more employees.<sup>48</sup> Based on this data, we conclude that a majority of manufacturers in this industry are small.

20. *New Car Dealers.* This industry comprises establishments primarily engaged in retailing new automobiles and light trucks, such as sport utility vehicles, and passenger and cargo vans, or retailing these new vehicles in combination with activities, such as repair services, retailing used cars, and selling replacement parts and accessories.<sup>49</sup> The SBA has established a size standard for this industry, which is

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<sup>40</sup> See 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS code of 517110. As of 2017, the U.S. Census Bureau definition shows the NAICS code as 517311 for Wired Telecommunications Carriers. See <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

<sup>41</sup> See U.S. Census Bureau, *2012 Economic Census of the United States*, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/51SSSZ5//naics~517110](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110).

<sup>42</sup> *Id.*

<sup>43</sup> The term "small entity" within SBREFA applies to small organizations (nonprofits) and to small governmental jurisdictions (cities, counties, towns, townships, villages, school districts, and special districts with populations of less than 50,000). 5 U.S.C. §§ 601(4)-(6). The Commission does not collect annual revenue data on EBS licensees.

<sup>44</sup> The NAICS Code for this service is 334220. 13 C.F.R. 121.201. See also U.S. Census Bureau, 2012 NAICS Definitions, "334220 Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing," <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en/ECN.NAICS2012.334220#>.

<sup>45</sup> *Id.*

<sup>46</sup> 13 CFR § 121.201, NAICS Code 334220.

<sup>47</sup> U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1231SG2, *Manufacturing: Summary Series: General Summary: Industry Statistics for Subsectors and Industries by Employment Size: 2012*, NAICS Code 334220, [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/31SG2//naics~334220](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/31SG2//naics~334220).

<sup>48</sup> *Id.*

<sup>49</sup> See U.S. Census Bureau, 2012 NAICS Definitions, NAICS Code 441110 "New Car Dealers," <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en/ECN.NAICS2012.441110#>.

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200 employees or less.<sup>50</sup> 2012 U.S. Census Bureau data indicate that 16,693 firms operated in this industry throughout the entire year.<sup>51</sup> Of this number, 14,534 firms had employment of fewer than 100 employees, and 1,830 firms had employment of 100 to 249 employees.<sup>52</sup> Therefore, the Commission estimates that the majority of firms in this industry are small entities.

21. *Used Car Dealers.* This industry comprises establishments primarily engaged in retailing used automobiles and light trucks, such as sport utility vehicles, and passenger and cargo vans.<sup>53</sup> The SBA has established a size standard for this industry, which is annual receipts of \$25 million or less.<sup>54</sup> 2012 U.S. Census Bureau data indicate that 18,645 firms operated in this industry throughout the entire year.<sup>55</sup> Of that number, 18,408 operated with annual receipts of less than \$25 million.<sup>56</sup> Based on this data, we conclude that a majority of the firms in this industry are small.

22. *All Other Motor Vehicle Dealers.* This industry comprises establishments primarily engaged in retailing other new and/or used motor vehicles and vehicles not provided for elsewhere.<sup>57</sup> This industry may include retailing these new vehicles in combination with repair services and selling replacement parts and accessories. Utility trailers are included here. The SBA has established a size standard for this industry, which is annual receipts of \$32.5 million or less.<sup>58</sup> 2012 U.S. Census Bureau data indicate that 1,507 firms operated in this industry throughout the entire year.<sup>59</sup> Of that number, 1,487 operated with annual receipts of less than \$25 million, while 12 firms had annual receipts between \$25 million and \$49,999,999.<sup>60</sup> Based on this data, we conclude that a majority of the firms in this industry are small.

23. *Automobile and Other Motor Vehicle Merchant Wholesalers.* This industry comprises establishments primarily engaged in the merchant wholesale distribution of new and used passenger automobiles, trucks, trailers, and other motor vehicles, such as motorcycles, motor homes, and

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<sup>50</sup> 13 CFR § 121.201, NAICS Code 441110.

<sup>51</sup> U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1244SSSZ5, *Retail Trade: Subject Series: Estab & Firm Size: Summary Statistics by Employment Size of Firms for the U.S.*: 2012 NAICS Code 441110, [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/44SSSZ5/naics~441110](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/44SSSZ5/naics~441110).

<sup>52</sup> *Id.* Available U.S. Census data do not provide a more precise estimate of the number of firms that have employment of 200 or fewer employees.

<sup>53</sup> See U.S. Census Bureau, 2012 NAICS Definitions, NAICS Code 441120 “Used Car Dealers,” <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en/ECN.NAICS2012.441120#>.

<sup>54</sup> 13 CFR § 121.201, NAICS Code 441120.

<sup>55</sup> U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1244SSSZ4, *Retail Trade: Subject Series - Estab & Firm Size: Summary Statistics by Sales Size of Firms for the United States*: 2012, NAICS code 441120, [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/44SSSZ4/naics~441120](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/44SSSZ4/naics~441120).

<sup>56</sup> *Id.*

<sup>57</sup> See U.S. Census Bureau, 2012 NAICS Definitions, NAICS Code 441228 “All Other Motor Vehicle Dealers,” <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en/ECN.NAICS2012.441228#>.

<sup>58</sup> 13 CFR § 121.201, NAICS Code 441228.

<sup>59</sup> U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1244SSSZ4, *Retail Trade: Subject Series - Estab & Firm Size: Summary Statistics by Sales Size of Firms for the United States*: 2012, NAICS code 441228, [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/44SSSZ4/naics~441228](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/44SSSZ4/naics~441228).

<sup>60</sup> *Id.* The available U.S. Census data do not provide a more precise estimate of the number of firms that meet the SBA size standard of annual receipts of \$32.5 million or less.

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snowmobiles.<sup>61</sup> The SBA has established a size standard for this industry, which is 250 employees or less.<sup>62</sup> 2012 U.S. Census Bureau data indicate that 4,756 firms operated in this industry throughout the entire year.<sup>63</sup> Of this number, 4,540 firms had employment of fewer than 100 employees, and 216 firms had employment of 100 or more employees.<sup>64</sup> Therefore, the Commission estimates that the majority of firms in this industry are small entities.

24. *Automobile Manufacturing.* This U.S. industry comprises establishments primarily engaged in (1) manufacturing complete automobiles (i.e., body and chassis or unibody) or (2) manufacturing automobile chassis only.<sup>65</sup> The SBA has established a size standard for this industry, which is 1,500 employees or less.<sup>66</sup> 2012 U.S. Census Bureau data indicate that 185 establishments operated in this industry that year.<sup>67</sup> Of this number, 162 establishments had employment of fewer than 1,000 employees, and 11 establishments had employment of 1,000 to 2,499 employees.<sup>68</sup> Therefore, the Commission estimates that the majority of manufacturers in this industry are small entities.

25. *Recreational Vehicle Dealers.* This industry comprises establishments primarily engaged in retailing new and/or used recreational vehicles commonly referred to as RVs or retailing these vehicles in combination with activities, such as repair services and selling replacement parts and accessories.<sup>69</sup> The SBA has established a size standard for this industry, which is annual receipts of \$32.5 million or less.<sup>70</sup> 2012 U.S. Census Bureau data indicate that 2,003 firms operated in this industry throughout the entire year.<sup>71</sup> Of that number, 1,921 operated with annual receipts of less than \$25 million, while 54

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<sup>61</sup> See U.S. Census Bureau, 2012 NAICS Definitions, NAICS Code 423110 “Automotive and Other Motor Vehicle Merchant Wholesalers,” <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.423110#>.

<sup>62</sup> 13 CFR § 121.201, NAICS Code 423110.

<sup>63</sup> U.S. Census Bureau, 2012 *Economic Census of the United States*, Table EC1242SSSZ5, *Wholesale Trade: Subject Series: Estab & Firm Size: Summary Statistics by Employment Size of Firms for the U.S.*: 2012 NAICS Code 423110, [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/42SSSZ5//naics~423110](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/42SSSZ5//naics~423110).

<sup>64</sup> *Id.* Available U.S. Census data do not provide a more precise estimate of the number of firms that have employment of 250 or fewer employees.

<sup>65</sup> See U.S. Census Bureau, 2012 NAICS Definitions, NAICS Code 336111 “Automotive Manufacturing,” <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.336111#>.

<sup>66</sup> 13 CFR § 121.201, NAICS Code 336111.

<sup>67</sup> U.S. Census Bureau, 2012 *Economic Census of the United States*, Table EC1231SG2, *Manufacturing: Summary Series: General Summary: Industry Statistics for Subsectors and Industries by Employment Size*: 2012, NAICS Code 336111, [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/31SG2//naics~336111](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/31SG2//naics~336111).

<sup>68</sup> *Id.* Available U.S. Census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees.

<sup>69</sup> See U.S. Census Bureau, 2012 NAICS Definitions, NAICS Code 441210 “Recreational Vehicle Dealers,” <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.441210#>.

<sup>70</sup> 13 CFR § 121.201, NAICS Code 441210.

<sup>71</sup> U.S. Census Bureau, 2012 *Economic Census of the United States*, Table EC1244SSSZ4, *Retail Trade: Subject Series - Estab & Firm Size: Summary Statistics by Sales Size of Firms for the United States*: 2012, NAICS code 441210, [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/44SSSZ4//naics~441210](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/44SSSZ4//naics~441210).



firms had annual receipts between \$25 million and \$49,999,999.<sup>72</sup> Based on this data, we conclude that a majority of the firms in this industry are small.

26. *Boat Dealers.* This U.S. industry comprises establishments primarily engaged in (1) retailing new and/or used boats or retailing new boats in combination with activities, such as repair services and selling replacement parts and accessories, and/or (2) retailing new and/or used outboard motors, boat trailers, marine supplies, parts, and accessories.<sup>73</sup> The SBA has established a size standard for this industry, which is annual receipts of \$32.5 million or less.<sup>74</sup> 2012 U.S. Census Bureau data indicate that 3,338 firms operated in this industry throughout the entire year.<sup>75</sup> Of that number, 3,328 operated with annual receipts of less than \$25 million, while 17 firms had annual receipts between \$25 million and \$49,999,999.<sup>76</sup> Based on this data, we conclude that a majority of the firms in this industry are small.

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

27. The potential rule changes proposed in the *Second Further Notice* if adopted, could, at least initially, impose some new reporting, recordkeeping, or other compliance requirements on some small entities. To evaluate any new or modified reporting, recordkeeping, or other compliance requirements that may result from the actions proposed in the *Second Further Notice*, the Commission has sought input from the parties on various matters.

28. In the event that the Commission adopts rules allowing signal booster operation in additional bands, wireless providers, regardless whether they are small entities or not, operating in those bands must create and maintain a registration mechanism, if they agree to permit Consumer Signal Booster operations on their licensed frequencies, to allow Consumer Signal Booster operators to register their devices. The Commission is not requiring wireless providers to permit operation of Consumer Signal Boosters on their licensed spectrum. Should any wireless provider—whether a small entity or not—choose not to permit Consumer Signal Booster operation on its spectrum, it will not be required to establish a registration system. For those small entities that choose to permit Consumer Signal Booster operation on their licensed spectrum, if they are not already allowing such use of Consumer Signal Boosters, they will be required to establish an electronic mechanism for registering Consumer Signal Boosters by the operators of such boosters. We do not have detailed insight into how burdensome this will be on small entities, although we think that the burden should not be too extensive in light of the fact that many wireless providers already have similar registration databases that could serve as the foundation for an expanded registration system. There may be commercially available software packages that could be readily adapted to meet the needs of such small entities. To the extent that a wireless provider already has a registration mechanism for signal booster use, the provider must update its mechanism to accommodate the new use in additional bands. We think that the cost impact of such expansion of already-existing Consumer Signal Booster registration software to account for additional spectrum bands, if adopted by the Commission, likely would be limited, although in some cases, it may not be negligible.

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<sup>72</sup> *Id.* The available U.S. Census data do not provide a more precise estimate of the number of firms that meet the SBA size standard of annual receipts of \$32.5 million or less.

<sup>73</sup> See U.S. Census Bureau, 2012 NAICS Definitions, NAICS Code 441222 “Boat Dealers,” <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en/ECN.NAICS2012.441222#>.

<sup>74</sup> 13 CFR § 121.201, NAICS Code 441222.

<sup>75</sup> U.S. Census Bureau, 2012 *Economic Census of the United States*, Table EC1244SSSZ4, *Retail Trade: Subject Series - Estab & Firm Size: Summary Statistics by Sales Size of Firms for the United States: 2012*, NAICS code 441222, [https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012\\_US/44SSSZ4/naics~441222](https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/44SSSZ4/naics~441222).

<sup>76</sup> *Id.* The available U.S. Census data do not provide a more precise estimate of the number of firms that meet the SBA size standard of annual receipts of \$32.5 million or less.

29. We also propose to facilitate the decision of some manufacturers, distributors, and retailers to embed signal boosters within vehicles such as cars, boats, and recreational vehicles. If our proposal is adopted, manufacturers, distributors, and retailers of embedded Consumer Signal Boosters will be required to provide the required advisory in an alternative format to consumers in any materials provided at vehicle delivery, as well as to consumers when they register the vehicle with the vehicle manufacturer. Because manufacturers, distributors, and retailers would be required by the rules to provide the alternative advisory in any on-line, point-of-sale marketing materials and in any print or on-line owner's manual, manufacturers, distributors, and retailers of automobiles would need to comply with the new rules. Under our proposal, the alternative advisory would provide warnings to consumers that they must register the embedded signal booster and would also include instructions for the consumer on how to disable the device for the specific vehicle. We anticipate that complying with these rules would require a one-time change to a manufacturer's, distributor's, or retailer's point-of-sale materials, and would be similar for large and small entities. In that event, the nature of the burden for any particular small entity may vary significantly depending upon the processes they employ to prepare, update, and distribute the materials that would be required pursuant to this proposed requirement, if adopted. At this time, it is difficult to ascertain how many small entities might be affected by this requirement, as the decision to embed Consumer Signal Boosters into various types of vehicles reflects a business decision made by a particular entity.

30. The Commission proposes to expand flexibility for enterprise and individual subscribers to take full advantage of the benefits of Consumer Signal Boosters by (1) eliminating the personal use restriction on Wideband Consumer Signal Boosters, and (2) prescribing a method for non-subscribers to register a Consumer Signal Booster with and receive the consent of all relevant wireless providers. We do not anticipate that the proposed elimination of the personal use restriction on Wideband Consumer Signal Boosters will impose burdens beyond existing compliance costs for small entities because it would merely make an existing technology and its applicable rules more widely available. However, adopting rules that allow non-subscribers to register a Consumer Signal Booster with all relevant wireless providers, rather than the current regulatory regime's approach of requiring registration with only the provider to which they are subscribed, may impose additional requirements on all wireless providers, including small entities, to comply with the rules.

31. While the Commission is not currently in a position to determine whether, if adopted, our proposals will require small entities to hire attorneys, engineers, consultants, or other professionals, we believe licensees will largely be able to employ the compliance mechanisms they already have in place. As noted above in the discussion concerning the possible addition of spectrum bands to the Consumer Signal Booster regulatory regime, we have every reason to believe that small entities would be able to access the necessary software without suffering extensive cost burdens. The Commission does not believe that the costs and/or administrative burdens associated with any potential rule changes will unduly burden small entities, but seeks comment on whether regulatory obligations can be further reduced while also accomplishing the Commission's stated goals.

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

32. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed 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 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 small entities."<sup>77</sup>

33. We note as a general matter that our proposed changes build on current requirements

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<sup>77</sup> 5 U.S.C. § 603(c)(1)-(4).

imposed on existing wireless providers choosing to participate in consenting to and registering Consumer Signal Boosters. The changes we propose in the *Second Further Notice* were designed to minimize and even eliminate regulatory hurdles for businesses, including small entities. Nothing in our existing rules or our proposed amendments requires any entity, wireless provider or not, to participate in permitting or facilitating Consumer Spectrum Booster use. Commission design of its proposals was intended to facilitate the appropriate use of Consumer Signal Boosters while not unduly burdening wireless providers (whether large or small), and others (not wireless providers) seeking to participate in providing equipment and/or services to wireless subscribers. Wireless providers can decide not to participate in the signal booster program.

34. First, in the *Second Further Notice*, the Commission proposes to authorize the operation of Consumer Signal Boosters in additional bands. As an alternative to not expanding the existing frequency bands available for Consumer Signal Boosters, the proposal to add additional frequency bands to the program, if adopted, might enable some small entities to participate in the Consumer Signal Booster program for the first time—for example, if the licenses they hold are only in one or more of the services that are proposed to be added to the Consumer Signal Booster program. Participating in the Consumer Signal Booster program may have benefits for small entities as well as other wireless providers, as consumers may decide to subscribe to a small entity's service offerings if a Consumer Signal Booster will improve the quality of the entity's signal in, e.g., the subscriber's home (whereas in the absence of a Consumer Signal Booster, the quality of the wireless signal coming into the home might not be acceptable to the potential subscriber. We conclude that this proposal, if adopted, would impose only limited burdens on small entities, particularly those that already have established the necessary consent and registration processes. Pursuant to our proposal, we seek comment on whether to extend the signal booster program to additional spectrum bands, and because each of the bands we are considering adding to the Consumer Signal Booster program may have different operating requirements, we also seek comment on whether the expanded operation in additional bands will necessitate additional requirements and technical specifications.

35. Second, we propose to remove unnecessary barriers to embedding signal boosters within vehicles such as cars, boats, and recreational vehicles. At present, any small entity seeking to provide embedded Consumer Signal Boosters in a vehicle must file a request for waiver of the existing rules to accommodate the differing circumstances present where Consumer Signal Boosters are embedded in a vehicle in advance of sale to a consumer. The requesting party must prepare and file a request for waiver of the existing rules, possibly respond to any pleadings addressing the waiver request, and await Commission action before being able to implement its business plan. These steps are necessary because it simply is not possible to meet the Commission's requirements for providing consumer advisories when the consumer does not see the embedded device. The Commission's proposal to specify a relatively simple and direct process for providing the required advisory in the case of embedded devices should, we believe, provide greater regulatory certainty and reduce the burden on small entities. While we specify much of the language to be included in the advisory, we took steps to minimize the economic impact on businesses by requiring only that the language be provided in any on-line, point-of-sale marketing materials and in any print or on-line owner's manual provided in the ordinary course of business as part of documents that a small entity would otherwise be preparing and providing to the customer. The proposed revised advisory requirements are a much simpler and less burdensome alternative to retaining the requirement to file individual waiver requests to permit entities to embed Consumer Signal Boosters in vehicles of various types. With our proposal, we seek to strike a balance between providing flexibility in the Consumer Signal Booster marketplace while retaining the protections offered by the labeling requirement.

36. In addition, while the alternative advisory would provide the same warnings to consumers that they must register the embedded signal booster with and receive the consent of the appropriate wireless provider(s) and would also include instructions for the consumer on how to disable the device for the specific vehicle, to provide maximum flexibility to vehicle manufacturers, distributors, and retailers of vehicles with embedded signal boosters, we propose to permit them to both craft their own

processes for their customers to disable the device and insert a description of that process in the manner of their choosing. So long as the chosen method is one that the average customer can easily undertake, our proposed rules allow businesses to craft their own processes rather than have the Commission imposing requirements that might be more burdensome, potentially significantly increase the cost of compliance for small as well as other entities, and perhaps be less effective than what the vehicle manufacturer, distributor, or retailer might be able to prepare.

37. Third, in the *Second Further Notice*, we consider whether and how to permit different types of enterprise entities to take full advantage of the benefits of Consumer Signal Boosters, while continuing to ensure that all signal boosters function safely on those networks and without causing interference. Specifically, we examine whether and how to enable enterprises (and individuals) to operate either type of Consumer Signal Booster on a provider's spectrum for which it does not subscribe. This would allow, for example, a small business in an area with poor wireless coverage to deploy a Consumer Signal Booster to improve coverage for its employees and customers on all wireless networks, regardless of the wireless provider to which it subscribes. To effect such a change and achieve the related public interest benefits, we propose amending our Consumer Signal Booster rules to (1) eliminate the personal use restriction on Wideband Consumer Signal Boosters, and (2) prescribe a method for non-subscribers to register a Consumer Signal Booster (whether Provider-Specific or Wideband) with and receive the consent of all relevant wireless providers. We believe the steps we have taken to eliminate the Wideband Consumer Signal Booster personal use restriction are steps that will result in a significant cost saving alternative for small entities by providing them with access to an "off the shelf" cost effective alternative to improve wireless communications that is not currently available under our rules.<sup>78</sup> To boost signal coverage and improve wireless communication under our existing rules, small business enterprises as well as enterprises of other sizes are limited to installation of Industrial Signal boosters that must be installed and operated by the wireless provider and may present both operational and financial challenges.

38. To fully achieve our goal of expanding access to Consumer Signal Boosters enterprise users, operators must have the flexibility to operate boosters on multiple providers' spectrum. Therefore, we propose a means to allow non-subscribers to register with and receive consent from providers to which they do not subscribe, while ensuring that providers maintain control over their networks. We believe that this increased flexibility in the use of Consumer Signal Boosters, if adopted, will benefit small entities in numerous ways. For example, a small business would be able to install a Wideband Consumer Signal Booster that would enhance the quality of wireless services for its employees as well as its customers, and we believe that this will be less costly and easier to implement than current available methods for making such improvements in access to quality wireless services.

39. We request interested parties to provide us with their comments whether our assessment of the potential economic and practical effects on small entities is accurate and appropriate. We also request interested parties to discuss any additional factors we should consider in reviewing the potential effects of our proposed rule changes on small entities.

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

40. None.

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<sup>78</sup> This step was strongly supported in comments filed on the Wilson Petition. *See generally* AHTUC Comments; ATA Comments; EWA Wilson Petition Comments; Getabettersignal.com Comments; Global Convergence, Inc. Comments; ICBA Comments; NPSTC Comments; NWSA Comments; SignalBoosters.com Comments; Sprint Comments; Staircase 3 Comments; Surecall Comments; TIA Comments; UPS Comments; API Reply; Staircase 3 Reply; UTC Reply.

**APPENDIX E****List of Commenters****Comments on FNPRM:**

The Association for College & University Technology Advancement (ACUTA)  
CellAntenna Corporation (CellAntenna)  
Enterprise Wireless Alliance (EWA)  
Nextivity, Inc. (Nextivity)  
T-Mobile USA, Inc. (T-Mobile)

**Reply Comments on FNPRM:**

AT&T Inc. (AT&T)  
Verizon

**Comments on Wilson Petition:**

Ad Hoc Telecommunications Users Committee (AHTUC)  
American Trucking Associations (ATA)  
Enterprise Wireless Alliance (EWA)  
Independent Community Bankers of America (ICBA)  
National Public Safety Telecommunications Council (NPSTC)  
National Wildfire Suppression Association (NWSA)  
Nextivity, Inc. (Nextivity)  
Sprint Corporation (Sprint)  
Staircase 3, Inc. d/b/a RepeaterStore and RSRF (Staircase 3)  
SignalBoosters.com  
Getabetttersignal.com  
Global Convergence, Inc. (Global Convergence)  
SureCall  
Telecommunications Industry Association (TIA)  
T-Mobile USA, Inc. (T-Mobile)  
United Parcel Service, Inc. (UPS)  
Wilson Electronics, LLC (Wilson)

**Reply Comments on Wilson Petition:**

American Petroleum Institute (API)

Nextivity, Inc. (Nextivity)

Staircase 3, Inc. d/b/a RepeaterStore and RSRF (Staircase 3)

Utilities Technology Council (UTC)

Wilson Electronics, LLC (Wilson)

***Ex Partes***

Nextivity, Inc. (Nextivity)

United Parcel Service, Inc. (UPS)

Wilson Electronics, LLC (Wilson)