

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Amendment of the Commission's Rules with	)	GN Docket No. 12-354
Regard to Commercial Operations in the 3550-	)	
3650 MHz Band	)	
	)	

**OPPOSITION AND RESPONSE TO PETITIONS FOR RECONSIDERATION OF  
FEDERATED WIRELESS, INC.**

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## EXECUTIVE SUMMARY

Federated Wireless, Inc. (“Federated Wireless”) is pleased to respond to the petitions for reconsideration of the Report and Order issued by the Federal Communications Commission (the “Commission”) for the 3550-3700 MHz band (“Citizens Band”). Among the issues filed in the petitions, Federated Wireless believes there are three that are worthy of the Commission’s reconsideration:

- (1) The Commission should grant the petitions that request reconsideration of the power/EIRP limits for Citizens Broadband Service Devices (“CBSDs”), authorizing higher EIRPs for CBSDs which will maximize the coverage and utility of the Citizens Band;
- (2) The Commission should reconsider the elevation accuracy determination requirement, and consider alternative proposals that will allow Spectrum Access Systems (“SAS”) to utilize the best available information for determining elevation and authorizing appropriate spectrum and power levels for CBSDs; and
- (3) The Commission should grant the petitions that request assignment of Priority Access Licenses (“PAL”) wherever they are needed for quality of service and interference protection reasons, even if only one application for a PAL license is filed for a census tract.

Petitions also were filed with respect to two other issues of interest, but in the view of Federated Wireless, no reconsideration of these issues is necessary:

- (1) The Commission should not reconsider its decision to allow reporting of CBSD locations either by an automated geolocation reporting capability or by a professional installer. For many reasons, the balance struck by the Commission was appropriate; and
- (2) The Commission need not entertain the petitions that request adoption of a maximum height for Category B antennas in this proceeding; that issue is squarely before the Commission in the 2<sup>nd</sup> FNPRM.

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**OPPOSITION AND RESPONSE TO PETITIONS FOR RECONSIDERATION OF  
FEDERATED WIRELESS, INC.**

Federated Wireless, Inc. (“Federated Wireless”) offers this response to the petitions for reconsideration filed with the Federal Communications Commission (the “Commission”) regarding the Report and Order for the 3550-3700 MHz band (“Citizens Band”) in the above-captioned proceeding.<sup>1</sup> Among the issues filed in the petitions, Federated Wireless believes there are three that are worthy of the Commission’s reconsideration:

- (1) The Commission should grant the petitions that request reconsideration of the power/EIRP limits for Citizens Broadband Service Devices (“CBSDs”), authorizing higher EIRPs for CBSDs which will maximize the coverage and utility of the Citizens Band;
- (2) The Commission should reconsider the elevation accuracy determination requirement, and consider alternative proposals that will allow Spectrum Access Systems (“SAS”) to utilize the best available information for determining elevation and authorizing appropriate spectrum and power levels for CBSDs; and
- (3) The Commission should grant the petitions that request assignment of Priority Access Licenses (“PAL”) wherever they are needed for quality of service and interference protection reasons, even if only one application for a PAL license is filed for a census tract.

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<sup>1</sup> See *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, GN Docket No. 12-354, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959 (2015). The Report and Order portion of this item hereinafter is referred to as the “3.5 GHz Order.” The Second Further Notice of Proposed Rulemaking portion is referred to as the “2<sup>nd</sup> FNPRM.”

Petitions also were filed with respect to two other issues of interest, but in the view of Federated Wireless, no reconsideration of these issues is necessary:

- (1) The Commission should not reconsider its decision to allow reporting of CBSD locations either by an automated geolocation reporting capability or by a professional installer. For many reasons, the balance struck by the Commission was appropriate; and
- (2) The Commission need not entertain the petitions that request adoption of a maximum height for Category B antennas in this proceeding; that issue is squarely before the Commission in the 2<sup>nd</sup> FNPRM.

**I. THE COMMISSION SHOULD GRANT THE PETITIONS REQUESTING AN INCREASE IN EIRP LIMITS FOR CBSDs.**

Federated Wireless agrees with Verizon, CTIA, Nokia, Motorola and the Wireless Innovation Forum (“WInnForum”) that the Commission should reconsider the CBSD power limits contained in Section 96.41(b). Specifically, Federated Wireless urges the Commission to adopt the proposals advanced by Verizon and Nokia to eliminate the conducted power limit and instead revise Section 96.41(b) to impose EIRP limits<sup>2</sup> of:

- 36 dBm/10 MHz for Category A CBSDs,
- 49 dBm/10 MHz for Category B non-rural CBSDs, and
- 56 dBm/10 MHz for Category B CBSDs.

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<sup>2</sup> Increasing the power limits governing each category of CBSDs will not make SAS management of Citizens Band spectrum allocation any more complex or challenging. In fact, the Verizon and Nokia proposals to focus solely on EIRP limits further simplifies the matter by no longer requiring the SAS to dictate both conducted and emitted power levels to CBSDs. As Verizon demonstrates, using only EIRP limits to “restrain power levels and coverage areas is adequate because EIRP reflects the combination of conducted power and antenna gain.” Verizon Petition at 4-5.

In the 3.5 GHz Order, the Commission adopted the following conducted and emitted power limits for CBSDs in Section 96.41(b) of the rules:

Device	Geographic Area	Maximum Conducted Output Power (dBm/10 MHz)	Maximum EIRP (dBm/10 MHz)	Maximum Conducted PSD (dBm/MHz)
Category A CBSD	All	24	30	14
Category B CBSD	Non-Rural	24	40	14
Category B CBSD	Rural	30	47	20

The WinnForum, Verizon, CTIA, Nokia, and Motorola each filed petitions for reconsideration of these limits, arguing that the power and EIRP limits set by Section 96.41(b) are too low for effective and efficient commercial deployments and will, thus, challenge the viability of the Citizens Band.<sup>3</sup> Petitioners contend, and Federated Wireless agrees, that Section 96.41(b) contains EIRP limits for Category A uses that are too low for adequate indoor coverage, and EIRP limits for Category B uses that are too low for sufficient outdoor coverage. The Category B EIRP is significantly lower than the EIRP authorized for typical small cell deployments,<sup>4</sup> and may necessitate use of high-gain, sectorized, directional antennas, for outdoor uses.<sup>5</sup> As petitioners argue, in many urban scenarios—the very environment where small cells could provide the greatest utility—the

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<sup>3</sup> See Petition for Reconsideration of the Wireless Innovation Forum, GN Docket No. 12.-354 (filed July 22, 2015) (“WinnForum Petition”); Verizon Petition for Reconsideration, GN Docket No. 12.-354 (filed July 23, 2015) (“Verizon Petition”); Petition for Reconsideration of CTIA—The Wireless Association, GN Docket No. 12.-354 (filed July 23, 2015) (“CTIA Petition”); Petition for Reconsideration by Nokia Networks (d/b/a Nokia Solutions and Networks US LLC), GN Docket No. 12.-354 (filed July 23, 2015) (“Nokia Petition”); Petition for Reconsideration of Motorola Solutions, Inc., GN Docket No. 12.-354 (filed July 23, 2015) (“Motorola Petition”). As a potential SAS Administrator, it is in the interest of Federated Wireless to promote technical rule changes such as this to encourage the adoption and broad utilization of the 3.5 GHz band.

<sup>4</sup> See WinnForum Petition at 6, Verizon Petition at 3-4, CTIA Petition at 7-8, Motorola Petition at 4, Nokia Petition at 7-9.

<sup>5</sup> See CTIA Petition at 7 (“[T]he conducted power and EIRP limits for Category B CBSDs are not high enough to provide significant outdoor coverage without the use of high gain, directional antennas”);

radio node will be situated below local clutter, and thus sectorized installations are not practical.<sup>6</sup>

Federated Wireless also agrees with Verizon that lower EIRP limits for CBSDs will decrease cell coverage, thereby increasing network costs, and constraining commercial interest and investment in the Citizens Band. Licensees will be required to purchase and deploy more radios, lease space on more towers to accommodate additional radios, and invest in additional backhaul to connect new sites to the core network.<sup>7</sup> Increasing the EIRP limits by 6 dBm/10 MHz for Category A CBSDs, and 9 dBm/10 MHz for Category B CBSDs, will allow licensees to provide reasonable indoor and outdoor coverage without requiring significant additional radio, tower lease, and backhaul costs.<sup>8</sup> Even at the increased EIRP limit, CBSDs will still operate at power levels no greater than those employed in typical small cell deployments and, considering the propagation loss characteristics of the 3.5 GHz band, this will preserve the vision of the Commission and industry that the Citizens Band should be a densely utilized service.

Although some petitions propose that the Commission increase the conducted power limits<sup>9</sup> and others propose the elimination of conducted power limits entirely,<sup>10</sup> all five petitioners request that the Commission increase the EIRP limits to the same levels as referenced above.<sup>11</sup> Federated

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<sup>6</sup> See Verizon Petition at 4 (“Exclusively using sectorized antennas for covering reasonable-sized areas in urban or suburban environments would be inefficient and inconsistent with typical deployments in such settings”); WInnForum Petition at 9 (“use of highly directional antennas in urban environments, especially those with narrow vertical (elevation plane) half power beamwidths is often not advantageous”); CTIA Petition at 7.

<sup>7</sup> See Verizon Petition at 3-4.

<sup>8</sup> *Id.*

<sup>9</sup> See WInnForum Petition at 6-10 (proposing that the Commission increase the conducted power limits for all CBSDs and adopt an inverse relationship between conducted power and antenna gain for Category B CBSDs); CTIA Petition at 7-8.

<sup>10</sup> See Verizon Petition at 4-5, Nokia Petition at 7.

<sup>11</sup> See WInnForum Petition at 8; Nokia Petition at 9; Verizon Petition at 5; CTIA Petition at 7-8; Motorola Petition at 4 (stating support for the proposal in the WInnForum Petition).

Wireless supports these petitions and, for the foregoing reasons, encourages the Commission to make these EIRP changes.

In the 3.5 GHz Order the Commission sought to “strike a practical balance” among the various proposals for power limits and left open the possibility to allow for higher power limits for Category B non-rural use either through a waiver process or through modification of the initial rules.<sup>12</sup> Given the compelling arguments in the petitions, including those of the WIInnForum, a multistakeholder organization representing prospective Citizens Band users, equipment providers, and SAS Administrators, Federated Wireless believes this issue is appropriate for consideration by the Commission at this time.

## **II. THE COMMISSION SHOULD RECONSIDER ITS ELEVATION ACCURACY DETERMINATION REQUIREMENTS FOR CBSDs.**

Federated Wireless encourages the Commission to reconsider the elevation accuracy determination requirement, and consider alternative proposals for determining elevation that will allow SASs to utilize the best available information and then authorize appropriate spectrum and power levels for CBSDs.

In their petitions, WIInnForum, Nokia, and Motorola request that the Commission reconsider the Section 96.39(a)(1) requirement that CBSDs have the ability to determine their geographic coordinates to an accuracy of  $\pm 3$  meters of elevation.<sup>13</sup> Each petitioner proposes a different potential solution, and Federated Wireless believes the Commission should consider each proposal:

- The WIInnForum, supported by Motorola, proposes that the Commission eliminate the elevation accuracy requirement as currently constituted in view of the fact that GPS performance in determining elevation is typically significantly poorer than the

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<sup>12</sup> See 3.5 GHz Order, 30 FCC Rcd at 4026, para. 214.

<sup>13</sup> See WIInnForum Petition at 9-11; Nokia Petition at 12-14; Motorola Petition at 4 (endorsing the WIInnForum proposal); see also 47 C.F.R. § 96.39(a)(1); 3.5 GHz Order, 30 FCC Rcd at 4028, para. 219.

$\pm 3$  meters standard of Section 96.39(a)(1).<sup>14</sup> The SAS would then calculate the elevation using detailed terrain databases in conjunction with the device's horizontal location and either the building floor from which the CBSD would operate (for Category A devices) or antenna height above ground level (for Category B devices).<sup>15</sup> The WInnForum proposes that the SAS could also calculate geolocations and elevations where GPS is unavailable by using, for example, street address and building floor, and could model interference protection by assuming worst-case operating locations (*e.g.*, highest floor level, location nearest another affected) if specific location information within a building is not available.<sup>16</sup>

- Assuming that GPS is used as the primary method for determining geographic coordinates in outdoor deployments, Nokia proposes that the elevation accuracy requirement for Category B CBSDs be revised to align with the federal government's GPS accuracy standard of  $\pm 15$  meters for average deployment conditions and  $\pm 37$  meters for worst site conditions.<sup>17</sup>
- Similar to the WInnForum proposal, Nokia requests that the elevation accuracy requirement be eliminated for Category A CBSDs, allowing the SAS to determine a device's elevation because "GPS does not work well or not at all while indoors."<sup>18</sup>

Although Federated Wireless takes no position as to the most effective solution for accurately determining CBSD elevation, the Commission should reconsider the efficacy of the requirement as currently constituted in Section 96.39(a)(1) in view of the legitimate concerns raised in the petitions filed by Nokia, Motorola, and the WInnForum.

### **III. THE COMMISSION SHOULD GRANT THE PETITIONS THAT REQUEST ASSIGNMENT OF PAL LICENSES WHEREVER THEY ARE NEEDED FOR QUALITY OF SERVICE AND INTERFERENCE PROTECTION REASONS, EVEN IF ONLY ONE APPLICATION FOR A PAL LICENSE IS FILED FOR A CENSUS TRACT.**

Federated Wireless urges the Commission to reconsider its position on authorization of PAL spectrum, and grant the petitions that request assignment of PAL licenses wherever licensed

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<sup>14</sup> See WInnForum Petition at 9-10.

<sup>15</sup> *Id.* at 10.

<sup>16</sup> *Id.* at 10-11.

<sup>17</sup> See Nokia Petition at 13.

<sup>18</sup> *Id.* at 14.

spectrum is needed for quality of service and interference protection reasons. CTIA, Motorola, and Jon M. Peha (“Peha”)<sup>19</sup> each seek reconsideration of Section 96.29(d), which states that where there is only one application for a PAL in a license area, no PAL will be assigned and the spectrum will remain reserved solely for GAA use until the next filing window for PAL competitive bidding.<sup>20</sup>

In adopting Section 96.29(d), the Commission reasoned that while it “could issue PALs for these areas on a non-auctioned basis . . . doing so in this band would not result in as efficient an assignment of the spectrum as licensing the spectrum for shared GAA use.”<sup>21</sup> However, as Motorola and Peha make clear, in cases where users in the Citizens Band need interference protection to ensure quality of service—such as hospitals, broadband service providers, critical infrastructure applications, and large enterprises—use of GAA spectrum over the long term will not be viable.<sup>22</sup> If PAL spectrum is available to be assigned, there is no reason why users having a need for interference protection should be precluded from accessing it.

The Commission recognized in the 3.5 GHz Order that “there is a substantial likelihood that in many of [the more than 74,000 census tracts throughout the country], at least initially, there would not be applicants for more than seven PALs – thereby precluding mutual exclusivity for these initial licenses.”<sup>23</sup> This lack of mutual exclusivity is likely to disproportionately affect prospective users of Citizens Band spectrum in rural areas, where demand will likely be sparser than in urban and suburban areas, but where there is nevertheless a need for high quality of service and interference

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<sup>19</sup> See Petition for Reconsideration on Auction Rules for Priority Access Licenses, GN Docket No. 12-354 (filed July 22, 2015) (“Peha Petition”).

<sup>20</sup> See 47 C.F.R. § 96.29(d); 3.5 GHz Order, 30 FCC Rcd at 4003, para. 136.

<sup>21</sup> 3.5 GHz Order, 30 FCC Rcd at 4003, para. 137.

<sup>22</sup> See Motorola Petition at 5; Peha Petition at 2.

<sup>23</sup> 3.5 GHz Order, 30 FCC Rcd at 4003, para. 137.

protection which can only be afforded through acquisition of a PAL.<sup>24</sup> If quality of service protection is needed by a prospective Citizens Band user, that user is not likely to revert to use of GAA spectrum. Instead, that user will abandon plans to utilize the Citizens Band, potentially hampering utilization of the band and leaving swaths of spectrum lying fallow.

Federated Wireless encourages the Commission to adopt a policy of issuing PALs on a non-auctioned basis where there are applicants for PAL spectrum but not enough mutual exclusivity requiring competitive bidding. This solution will ensure utilization of the Citizens Band in all areas, including rural areas, even if only one application for a PAL is filed for a census tract. It will also offer protected spectrum to those who need it, and thereby serve the public interest.

**IV. THE COMMISSION SHOULD NOT RECONSIDER ITS DECISION TO ALLOW REPORTING OF CBSD LOCATIONS EITHER BY PROFESSIONAL INSTALLATION OR BY AUTOMATED GEOLOCATION REPORTING CAPABILITIES; THE BALANCE THE COMMISSION STRUCK WAS THE RIGHT ONE.**

In the 3.5 GHz Order, the Commission adopted Section 96.39(a), which dictates that location information for CBSDs will be captured and reported to the SAS as part of a CBSD's initial registration, either via automated geolocation technologies or by a professional installer.<sup>25</sup> Federated Wireless believes this approach strikes the right balance because it recognizes that deployment of CBSDs in indoor settings, or without clear line of sight to GPS, may not lend itself to determining accurate location information through automated geolocation reporting capabilities alone. Authorizing CBSD registration by professional installers will be essential in some circumstances. However, the National Association of Broadcasters ("NAB") and the Satellite Industry Association ("SIA") each filed petitions for reconsideration of Section 96.39(a) arguing that the Commission

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<sup>24</sup> See also Motorola Petition at 6.

<sup>25</sup> See 47 C.F.R. § 96.39(a); 3.5 GHz Order, 30 FCC Red at 4028, para. 219.

should not allow professional installers to register the location of a CBSD and mandate, instead, that all CBSDs include a geolocation reporting capability.<sup>26</sup>

Federated Wireless believes the Commission fully and fairly considered this issue before issuing the 3.5 GHz Order, and it does not believe the Commission should reconsider the issue at this time.<sup>27</sup> Automated geolocation reporting is unlikely to provide the level of accuracy required by the rules in many circumstances, and mandating that all CBSDs include such a capability imposes a costly burden on device manufacturers and consumers that far outweighs any potential benefit. Moreover, NAB and SIA support their position almost entirely by analogy to the TV White Spaces (“TVWS”) databases, an analogy that is inapposite and fails to take into consideration both the unique characteristics of the Citizens Band and the success of professional installation regimes in other contexts.

**A. Automated Geolocation Reporting Capabilities Will Not Provide the Levels of Accuracy Required by the Rules in All Deployment Settings, and There Are Many Methods to Test the Quality of Location Information.**

In their petitions for reconsideration, NAB and SIA request that the Commission make the inclusion of an automated geolocation reporting capability mandatory for all CBSDs.<sup>28</sup> There is no doubt that the spectrum sharing regime envisioned by the Commission for the Citizens Band

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<sup>26</sup> See Petition for Reconsideration of the National Association of Broadcasters, GN Docket No. 12-354 (filed July 23, 2015) (“NAB Petition”); Petition for Reconsideration of the Satellite Industry Association, GN Docket No. 12-354 (filed July 23, 2015) (“SIA Petition”).

<sup>27</sup> See, e.g., Letter from Rick Kaplan, General Counsel and Executive Vice President, Legal and Regulatory Affairs, National Association of Broadcasters to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-354 (filed Apr. 10, 2015) (Advancing the argument that geolocation capability must be required in CBSDs to prevent professional installers from inputting false location information as has occurred in the TVWS databases: “the FCC’s current spectrum database system [for TVWS] does not prevent users from entering false information in the TVWS database. The database incorporates no checks to ensure that users enter correct information, or even that they enter any information in all required fields. Expanding it at this point, prior to making any fundamental changes, is highly problematic . . . Until the Commission develops a framework that requires all devices to have some form of geolocation and assigns responsibility to database administrators for patently false entries, spectrum sharing will simply not work.”) (internal citations omitted).

<sup>28</sup> See SIA Petition at 15; NAB Petition at 1, 8.

necessitates accurate CBSD location information to allow the SAS to coordinate users and protect incumbents from harmful interference.<sup>29</sup> Indeed, an automated geolocation reporting capability makes sense for outdoor systems that may otherwise utilize GPS capability for network synchronization and timing. However, given the well-documented issues with indoor GPS performance in terms of both accuracy and challenges to obtain a reliable signal, and that indoor systems may not be constrained to tight synchronization for operation, it makes little sense for the Commission to require all CBSDs to include geolocation reporting capabilities. As the Commission noted in the 3.5 GHz Order, “in some conditions (*e.g.*, outdoors with clear line of site [*sic*] to GPS), automated reporting of geolocation to our location accuracy requirements is achievable. Other conditions, particularly indoors, may prove to be more challenging.”<sup>30</sup> In fact, the indoor accuracy failings of GPS systems may make it *less* likely that the CBSD could meet the  $\pm 50$  meters horizontal/ $\pm 3$  meters vertical location accuracy requirements of Section 96.39(a) via automated geolocation reporting, particularly when compared to the level of accuracy obtainable via installation by an industry-certified professional installer.

There are a variety of quality control methods a SAS Administrator can employ to verify a device’s location. For instance, the IP address of a CBSD could be used to detect if a coordinate was entered erroneously and thus correct a significant location error. The SAS could also coordinate with downstream infrastructure to ensure that a CBSD is located at its authorized connection, as is the practice in the satellite industry, where the transmit and receive units are pre-programmed with authorized location information before they are dispatched for installation and if certain actual data generated by the installation is inconsistent with the pre-programmed data, the unit cannot be

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<sup>29</sup> See NAB Petition at 3.

<sup>30</sup> 3.5 GHz Order, 30 FCC Rcd at 4028, para. 220.

activated. The SAS could also verify a CBSD's geolocation by reference to its power levels along with other measurements and unique CBSD signatures, or by monitoring and analyzing changes in Key Performance Indicator report patterns from a given CBSD. Finally, the SAS could leverage other network-assisted techniques to augment CBSD geolocation information, as NAB itself observes<sup>31</sup> or Wi-Fi geolocation assistance.<sup>32</sup>

**B. The Analogy to the Problem of Inaccurate or False TV White Space Device Location Registrations Is Inapposite.**

NAB and SIA argue that the Commission should require automated geolocation reporting capability in all CBSDs because there have been instances of obviously false location information being fed into the TVWS databases. Thus, from the point of view of NAB and SIA, the entire concept of a professional installation regime is “fatally flawed and cannot be corrected.”<sup>33</sup> This analogy fails to account for the differences among unlicensed TVWS users and the prospective licensees and SAS Administrators that will be collaborating to share Citizens Band spectrum.

TVWS devices operate on an unlicensed basis and users need not meet the qualifications required of Commission licensees. Conversely, SAS Administrators and Citizens Band licensees (either licensed by rule or holding PAL licenses) will be thoroughly incented to ensure that all geolocation information for CBSDs that is provided to the SAS is accurate. Fundamentally, a SAS cannot properly allocate frequencies and protect incumbent and PAL licensees without precise geolocation information and, as a result, SAS Administrators will have every incentive to ensure that their databases have accurate information to avoid losing registrants to rival administrators.

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<sup>31</sup> See NAB Petition at 7.

<sup>32</sup> It should be noted that in terms of needing accurate CBSD information in order to protect incumbents, CBSDs that are used indoors, and whose location will be verified by a professional installer, may be the least likely to cause interference to Fixed Satellite Service (“FSS”) operations given the RF isolation and propagation loss inherent in indoor deployments.

<sup>33</sup> NAB Petition at 5.

Similarly, PAL and General Authorized Access (“GAA”) licensees will need the SAS to allocate spectrum that will provide the best performance and lowest risk of interference at a device’s actual location. Thus, users will likewise be incented to make sure that the geolocation data fed into the SAS is accurate, and will have no reason to intentionally provide false information, as NAB and SIA imply. These incentives will lead the industry to adopt robust standards for professional installers to ensure that the location information for CBSDs meets or exceeds the accuracy requirements of Section 96.39(a).

Professional installation regimes are actively and successfully used in a number of services, including two-way satellite broadband, and these regimes operate successfully and without widespread—or even relatively common—concerns about the accuracy of the location information provided during installations. There is no indication that a professional installation regime necessarily leads to the type of geolocation information issues that have affected the TVWS databases, despite NAB and SIA’s claims that those problems are inevitable.

Given the well-known problems of indoor GPS performance, the myriad quality control measures by which a SAS Administrator can verify a CBSD’s location regardless of how the geolocation information is initially input, the incentives for all Citizens Band stakeholders to ensure that SASs receive accurate geolocation information, and the success of professional installation regimes for other services, the Commission should deny NAB and SIA’s petitions for reconsideration and should not disallow professional installation of CBSDs or mandate the inclusion of geolocation reporting capabilities in all CBSDs.

**V. THE COMMISSION NEED NOT ENTERTAIN PETITIONS THAT REQUEST ADOPTION OF A MAXIMUM HEIGHT FOR CATEGORY B ANTENNAS IN THIS PROCEEDING; THAT ISSUE IS SQUARELY BEFORE THE COMMISSION IN THE SECOND FURTHER NOTICE OF PROPOSED RULEMAKING.**

SIA also seeks reconsideration of a number of other decisions in the 3.5 GHz Order, including the fact that the Commission adopted a six-meter height above average terrain antenna height limit for outdoor installations of Category A CBSDs, but did not adopt a maximum height for Category B antennas,<sup>34</sup> and its adoption of out-of-band emission (“OOBE”) limits<sup>35</sup> as they relate to interference protection of incumbent FSS operations.<sup>36</sup> As SIA notes, the Commission sought comment on a number of issues “including the OOBE levels” before deciding them in the 3.5 GHz Order.<sup>37</sup> Federated Wireless is of the view that the Commission need not reconsider these issues now.

The 2<sup>nd</sup> FNPRM seeks comment on a number of issues related to both in-band and out-of-band protection of FSS operations, including OOBE limits and how to take into account issues such as the elevation angle of an FSS station.<sup>38</sup> Given that antenna height for Citizens Band operations, OOBE limits, and FSS earth station elevation angles each constitute a single data point in the ongoing, much larger calculus being addressed in the 2<sup>nd</sup> FNPRM, the Commission need not reconsider its earlier action in this proceeding. As evidenced by the work at the WIInnForum, key industry participants are coming together to develop the methodology and parameters for protecting

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<sup>34</sup> See 3.5 GHz Order, 30 FCC Rcd at 4024, para. 207.

<sup>35</sup> See *id.* at 4017-20, paras. 184-90.

<sup>36</sup> See SIA Petition at 2-9.

<sup>37</sup> *Id.* at 5.

<sup>38</sup> See 2<sup>nd</sup> FNPRM, 30 FCC Rcd at 4087-90, paras. 436-45.

in-band FSS earth stations the Commission seeks through the 2<sup>nd</sup> FNPRM.<sup>39</sup> To reopen the 3.5 GHz Order for reconsideration of the technical issues raised by SIA would be unproductive and result in unnecessary delay.

However, should the Commission elect to reconsider its decision not to impose a maximum antenna height for Category B antennas, Federated Wireless is not opposed in theory to antenna height limits. Any rule the Commission might adopt must be coordinated with the proposed increase in EIRP limits and thereby account for the fact that factors other than antenna height, such as power levels and local clutter, also affect propagation characteristics. All of these factors should be taken into consideration, allowing installation of Category B CBSDs in configurations that will ensure optimal coverage in different scenarios while protecting incumbent users. For instance, Category B CBSDs could be installed at a lower power level but on a higher antenna where there is clearance over clutter in a service area. Similarly, a Category B CBSD mounted on a lower antenna could operate at an increased power level to provide coverage to a larger service area with the knowledge that the lower-level clutter would provide protection to nearby incumbent and protected users.

## **VI. CONCLUSION.**

Federated Wireless applauds the Commission's leadership and progress in crafting a Citizens Band regime that will both protect incumbent users and make significant amounts of spectrum available to support mobile broadband uses that continue to grow exponentially. To maintain this positive momentum, the Commission should at this point take simple, straightforward steps on

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<sup>39</sup> As the WInnForum notes, its Reply Comments to the 2<sup>nd</sup> FNPRM were "developed with the support of the Forum's members in the FSS community and designated observers that include representatives from the National Association of Broadcasters (NAB)." Reply Comments of the Wireless Innovation Forum on the Federal Communications Commission Second Further Notice of Proposed Rulemaking Seeking Comment on Amendment of the Commission's Rules with Regard to Commercial Operation in the 3550-3650 MHz Band Part 1: Fixed Satellite Services, GN Docket No. 12-354, at 3 (filed Aug. 13, 2015).

