

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

In the Matter of	)	
	)	
Service Rules for Advanced Wireless Services	)	WT Docket No. 12-70
in the 2000-2020 MHz and 2180-2200 MHz	)	
Bands	)	
	)	
Fixed and Mobile Services in the Mobile	)	ET Docket No. 10-142
Satellite Service Bands at 1525-1559 MHz and	)	
1626.5-1660.5 MHz, 1610-1626.5 MHz and	)	
2483.5-2500 MHz, and 2000-2020 MHz and	)	
2180-2200 MHz	)	
	)	
Service Rules for Advanced Wireless Services	)	WT Docket No. 04-356
in the 1915-1920 MHz, 1995-2000 MHz,	)	
2020-2025 MHz and 2175-2180 MHz Bands	)	

**REPLY COMMENTS OF DISH NETWORK CORPORATION**

June 1, 2012

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**REPLY COMMENTS OF DISH NETWORK CORPORATION**

DISH Network Corporation (“DISH”) submits these reply comments in response to the comments filed in the above-captioned proceeding. The Commission’s proposed actions—with some prudent changes and expeditious implementation—will unleash additional spectrum for wireless broadband, usher in a dynamic new entrant that will bolster competition in the wireless marketplace, and preserve the Mobile-Satellite Service (“MSS”) in the 2000-2020 MHz and 2180-2200 MHz bands (“2 GHz band” or “S-Band”).

**I. INTRODUCTION AND SUMMARY**

The record reflects broad industry and public support for the Commission’s proposal to modify expeditiously DISH’s authority in the 2 GHz band to include terrestrial advanced wireless services (“AWS”). Any other course of action risks delay, anticompetitive effects, and protracted legal proceedings, all of which are contrary to the public interest.

Comments in response to the *Notice of Proposed Rulemaking* (“*NPRM*”)<sup>1</sup> from diverse quarters—including large and small wireless carriers, equipment manufacturers, and consumer groups—support DISH’s conclusions:

- *Co-frequency sharing is not possible.* Almost all commenters agree on the central premise of the Commission’s proposal—that co-frequency sharing between separately controlled MSS/Ancillary Terrestrial Component (“ATC”) and Advanced Wireless Service (“AWS-4”) operations is infeasible, requiring both operations to be under integrated control.
- *2 GHz terrestrial broadband will benefit American consumers.* New terrestrial mobile broadband operations in the 2 GHz band will benefit American consumers. The Commission should expedite deployment by immediately unlocking the band from the artificial constraints of the ATC gating requirements.
- *Preserving MSS is important.* MSS fulfills an important need for ubiquitous connectivity that cannot be met by terrestrial offerings alone and should be preserved.
- *Performance milestones and sanctions should be reasonable.* Commenters support buildout schedules and measured consequences on par with requirements set in other proceedings to allocate spectrum for mobile services. Only one commenter seeks a more aggressive schedule than the seven-year timeline proposed by the Commission. But the AWS-4 new entrant should not be hamstrung with an unrealistic schedule to which incumbents are not subject and that ultimately delays service to the public. Commenters also agree that missed performance benchmarks should not result in the “death penalty” of automatic license termination.
- *The Commission has the authority to proceed.* There is no serious challenge presented to the Commission’s authority to modify DISH’s authorizations under Section 316 and allow it to offer AWS under Part 27 of the Commission’s rules.

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<sup>1</sup> Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, WT Docket No. 12-70, Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz, ET Docket No. 10-142, Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, WT Docket No. 04-356, *Notice of Proposed Rulemaking and Notice of Inquiry*, FCC 12-32 (rel. Mar. 21, 2012) (“*NPRM*” and “*NOI*”).

The few discordant points of view are misguided and should be rejected because they will only inhibit competition in mobile broadband. No commenter offers any credible evidence that consumers would benefit from any significant deviation from the Commission's proposal:

- *Calls for a reduction in the MSS allocation should be rejected.* MSS in the S-Band holds promise, and the FCC should allow that promise to be fulfilled by freeing the current 2 GHz band operator from the constraints that have stunted its predecessors' growth. Calls for a reduction or revocation of the 2 GHz MSS allocation ignore the benefits of an expanded MSS offering to, among others, the public safety community and remote travelers or dwellers with little or no other access to telecommunications. An MSS reduction would also set back efforts to achieve international harmonization of these frequencies and cannot be lawfully implemented.
- *Conditioning the expanded terrestrial authority on DISH's relinquishing of spectrum would be unwarranted, unlawful, and would not serve the public interest.* Forcing DISH to "give back" all or a significant portion of its spectrum would be an improper license revocation, unduly retroactive, and a taking of the physical assets in which DISH has invested. It is also beyond the scope of the *NPRM*.
- *An incentive auction would be unlawful, and is a moot question.* Congress has not authorized incentive auctions in bands that lack competing licensees, such as the 2 GHz band. Even if the Commission had such authority, DISH would not voluntarily surrender its spectrum rights to permit such an auction.
- *Shifting the 2000-2020 MHz uplink band would cause delay and reduce spectrum efficiency.* The few commenters who support an upward migration of the AWS-4 uplinks cannot agree on how much of a move is necessary or what benefits would accrue from any such move. In fact, a move is not needed to solve any problem, since the combination of reasonable constraints on S-Band and H Block operations proposed by DISH provides sufficient protection for both operations. On the other hand, a shift would create problems by abutting AWS-4 uplink operations to Broadcast Auxiliary Service ("BAS") and government uses of the 2025-2110 MHz band. The end result would be a delay in mobile broadband competition, a blow for international spectrum harmonization, and an impingement on DISH's rights—all without any offsetting public benefits.
- *Conditions are unnecessary.* Other conditions proposed by a minority of commenters related to roaming, wholesale capacity, transfers, and recordkeeping are all unnecessary. The Commission should not burden a new entrant with conditions to which even the incumbents are not subject, and should reject proposals beyond the *NPRM*'s scope.

The record also reflects skepticism about the 2 GHz Extension Band Concept raised in the *NOI*. U.S. Cellular opposes the concept altogether. While a few commenters support further exploration, the record demonstrates that the concept cannot be implemented in a reasonable timeframe and faces significant legal, technological, and public policy hurdles.

In short, the considerable scope of agreement reflected in the record, combined with the relative ease of solving the remaining disagreements, support prompt issuance of a final order in the proceeding. Speed is of the essence, as the spectrum crunch is looming.<sup>2</sup> Acting quickly will allow DISH to invest in the chipsets, infrastructure, and device development required to bring a competitive terrestrial mobile broadband service to the market.

## **II. MODIFICATION OF DISH’S EXISTING AUTHORITY IS THE ONLY WAY TO ACHIEVE THE DUAL BENEFITS OF TERRESTRIAL MOBILE BROADBAND AND MSS**

Nearly all commenters agree that co-frequency sharing between separate terrestrial and MSS operators is not feasible. *All* commenters also agree that allowing full terrestrial use of the

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<sup>2</sup> See Alcatel-Lucent Comments at 5 (“By acting quickly to reallocate the band and by adhering to its proposals to grant terrestrial authority to the current 2 GHz MSS licensee with required build-out timelines, the Commission proposes the most expeditious path . . . .”); CCIA Comments at 10 (“CCIA urges the Commission to complete this rulemaking as soon as possible so that DISH can begin to build-out its proposed mobile broadband network on its 2 GHz MSS spectrum.”); CEA Comments at 7 (“In light of the ever increasing demand for mobile broadband services, the Commission should promptly complete this rulemaking and license the AWS-4 band with flexible use rules in order to enable the timely deployment of terrestrial services in the 2 GHz MSS band.”); CTIA Comments at 2 (“CTIA encourages the Commission to move quickly . . . .”); Globalstar Comments at 5 (“To maximize the[] public interest benefits, Globalstar urges the Commission to move quickly . . . .”); Motorola Mobility Comments at 7 (“[T]he new AWS-4 service rules should, to the greatest extent possible, be modeled on existing standards and rules and should also be designed to facilitate a rapid and efficient introduction of AWS-4 terrestrial operations.”); Nokia Comments at 1 (“Nokia Siemens Networks supports expeditiously repurposing the 2 GHz [MSS] spectrum for more flexible uses including terrestrial services.”); NRTC Comments at 3 (“The Commission should expeditiously implement its 2 GHz proposal in order to spur competition and innovative services for consumers.”); RCA Comments at 10 (“[T]he Commission should make the 2 GHz spectrum available for commercial use as soon as practicable”); Verizon Comments at 5 (“The Commission should act promptly . . . .”).

2 GHz MSS band will benefit consumers and help address the country's broadband spectrum crunch, and that the benefits of terrestrial broadband should not come at the expense of MSS, which supports public safety and other services.

**A. The Record Confirms that Co-frequency Sharing Between Separate MSS and Terrestrial Operators Is Not Feasible**

There is almost universal consensus on the fundamental premise of the Commission's proposal to modify DISH's authority to include AWS-4: MSS and terrestrial operations can only coexist over the same frequencies on an integrated basis.<sup>3</sup> DISH has provided a thorough engineering analysis, conducted by two prominent electrical engineering experts, Dr. Richard Barnett of Telecomm Strategies, Inc. and Dr. Michael Dellomo of Radyn, Inc., validating that conclusion.<sup>4</sup>

Many commenters agree, both with the *NPRM* and with the findings of Drs. Barnett and Dellomo:

- For example, Greenwood Telecommunications concludes that concurrent MSS and AWS usage is “infeasible without extremely close coordination between the two independent operators.”<sup>5</sup>
- The Satellite Industry Association (“SIA”) concurs: “[B]ecause of the careful in-band coordination that must occur in order to allow widely deployed, densely utilized terrestrial transmitting facilities to co-exist with satellite signals that must travel over substantial distances[, t]he only effective way to prevent harmful interference under these circumstances is to ensure that 2 GHz MSS operators have control over AWS operations in the band.”<sup>6</sup>

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<sup>3</sup> *NPRM* ¶ 71.

<sup>4</sup> See Report of Dr. Richard Barnett, Telecomm Strategies, Inc., and Dr. Michael Dellomo, Radyn, Inc., *The Technical Basis for Requiring Control of Satellite and Terrestrial Operations in the 2 GHz Band by the Same Operator* (May 17, 2012) (“Barnett/Dellomo Report”) (attached as Exhibit 1 to DISH's comments).

<sup>5</sup> Greenwood Telecommunications Comments at 10.

<sup>6</sup> SIA Comments at 3.

- The U.S. GPS Industry Council notes: “Where space-based and terrestrial systems share the same spectrum, careful coordination is required in order to avoid harmful interference between and among facilities operating in the two services. This is especially the case when both the satellite and ground-based components include mobile operations. Therefore, the Council agrees with the Commission’s initial determination that ‘assignment of terrestrial licenses to any entity other than the incumbent MSS licensee remains impractical.’”<sup>7</sup>
- According to Alcatel-Lucent, “technical and policy considerations argue in favor of assigning the terrestrial licenses to the incumbent MSS licensee, rather than splitting the terrestrial licenses from the MSS licenses.”<sup>8</sup>
- Globalstar observes that “[u]nder real-world conditions, complex, dynamic frequency coordination cannot be achieved between separately-controlled MSS and terrestrial networks.”<sup>9</sup>
- The Mobile Satellite Users Association (“MSUA”) explains that “terrestrial usage rights in MSS bands should only be granted to existing MSS operators, in order to avoid potential interference with MSS service.”<sup>10</sup>
- The National Rural Telecommunications Cooperative (“NRTC”) agrees that, “[w]hile considerable technological advances have been made over the last decade, these particular advances do not suggest that same-band, separate-operator sharing of the 2 GHz band is any more technologically or economically feasible than it was in 2003,” and concludes that “the licenses should be assigned to the incumbent MSS licensee.”<sup>11</sup>

Equally important, no commenter offers technical support for a contrary view.

MetroPCS, the sole dissenter on this issue, offers generalized and unsupported speculation that, “using known technologies, the satellite provider with the ATC provider can implement interference mitigation technologies to allow for concurrent usage.”<sup>12</sup> While it is true that “advanced coding and interference cancellation and mitigation techniques possible with the

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<sup>7</sup> U.S. GPS Industry Council Comments at 3 (citation omitted).

<sup>8</sup> Alcatel-Lucent Comments at 5.

<sup>9</sup> Globalstar Comments at 6.

<sup>10</sup> MSUA Comments at 2.

<sup>11</sup> NRTC Comments at 4.

<sup>12</sup> MetroPCS Comments at 20.

current technologies allows for greater interference protection,”<sup>13</sup> the implementation of these techniques is *only* feasible when operations are integrated, as Drs. Barnett and Dellomo have demonstrated in their analysis.<sup>14</sup> In particular, the “reverse link interference cancellation” technique cited by MetroPCS<sup>15</sup> is not a viable solution in the absence of integration, as it requires real-time knowledge of signals for this interference to be prevented.<sup>16</sup>

MetroPCS’s sharing hypothesis also rests on a demonstrably false foundation. MetroPCS makes much of the spot beam architecture of DISH’s MSS satellites, claiming: “With spot beams . . . the zone of no service between a terrestrial system and a satellite system in an area adjacent to it would be relatively small and would be consistent with existing adjacent terrestrial systems.”<sup>17</sup> In fact, the 2 GHz satellites’ spot beams are not tailored to small areas. Rather, each spot beam’s gain is maximized for a large area (a 1,000 mile main beam region for DISH’s G-1 satellite)—a region far too large to allow differentiation between metropolitan and rural areas. Equally important, the beam’s focus on that area does not mean that the beam will transmit exclusively to it; the strength of the signal does not fall off abruptly outside these large beam contours. Each spot beam instead transmits at reduced gain across almost the entire country. Based on the totality of the record, there is no basis for departing from the Commission’s precedent and the *NPRM*’s proposed finding that co-frequency sharing is not feasible between MSS and an independent terrestrial provider.

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<sup>13</sup> *Id.*

<sup>14</sup> See Barnett/Dellomo Report §§ 1.3, 1.5, 3-4.

<sup>15</sup> MetroPCS Comments at 20-21.

<sup>16</sup> See Barnett/Dellomo Report § 1.3.

<sup>17</sup> MetroPCS Comments at 21.

## **B. Deploying Terrestrial Mobile Broadband in the 2 GHz Band Will Benefit American Consumers**

Practically every commenter extols the virtues of the Commission's proposal for allowing full terrestrial use of the AWS-4 band. In Alcatel-Lucent's words, "[t]here is great anticipation for how unleashing 40 MHz of MSS spectrum for commercial broadband use, as proposed in the NPRM, will fuel continued innovation and investment to benefit consumers and the Nation's economy."<sup>18</sup> And NRTC states: "This proceeding presents the opportunity for the Commission to bring much-needed wireless competition and service to rural America while driving innovation, investment and job creation throughout the nation."<sup>19</sup>

Moreover, no party disputes, and many emphasize, that the Commission's proposal will make significant progress towards achieving the goals of the National Broadband Plan and addressing the broadband spectrum shortage. For example, CTIA joins a chorus when it opines:

As has been repeatedly stressed for nearly three years, there is an urgent need for additional spectrum to accommodate mobile broadband services, demand for which is increasing at an exponential rate. The National Broadband Plan set forth an aggressive timetable for deploying new spectrum, and the 2 GHz spectrum will play an important role in realizing the Commission's objectives and the wireless industry's needs.<sup>20</sup>

The Computer & Communications Industry Association ("CCIA") "applauds the Commission's efforts to free up additional spectrum for mobile broadband use and its goals of increasing investment and competition in the mobile broadband marketplace."<sup>21</sup> The Consumer Electronics

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<sup>18</sup> Alcatel-Lucent Comments at 4.

<sup>19</sup> NRTC Comments at 10.

<sup>20</sup> CTIA Comments at 2; *see also* CCIA Comments at 10; CEA Comments at 4; Globalstar Comments at 3-5; Nokia Comments at 1-3, 6; RCA Comments at 3, 10; Verizon Comments at 4-5.

<sup>21</sup> CCIA Comments at 10.

Association (“CEA”), for its part, urges “[t]he expedited licensing of the AWS-4 band[, which] will provide additional spectrum to fuel the continued innovation and rapid growth in mobile services by helping to address the widely acknowledged broadband spectrum shortage.”<sup>22</sup>

**C. MSS Serves the Public Interest and Should Be Preserved**

The benefits of terrestrial broadband need not, and should not, come at the expense of MSS. The Commission’s proposal aims both to advance broadband deployment and preserve MSS in the 2 GHz band for good reason. MSS remains an important service for government and commercial users within the United States and overseas. In the words of the MSUA, “MSS networks are uniquely situated to meet the critical needs of emergency response providers and are immune from the kinds of natural and man-made disasters that can affect ground-based infrastructure, as the Commission has recognized in multiple prior proceedings.”<sup>23</sup> MSS, for example, provided needed communications services, both at home following Hurricanes Katrina and Rita and abroad following earthquakes in Haiti, Chile, and Japan. SIA concurs: “Only by ensuring that satellite and terrestrial services can co-exist will the Commission secure the complementary benefits of enhanced broadband capacity in densely-populated areas along with ubiquitous coverage of underserved rural and other insular areas that can only be reached via satellite.”<sup>24</sup>

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<sup>22</sup> CEA Comments at 4; *see also* COMPTTEL Comments at 4-6; Globalstar Comments at 5; Motorola Mobility Comments at 2; Nokia Comments at 1; NRTC Comments at 3; RCA Comments at 10; Verizon Comments at 4.

<sup>23</sup> MSUA Comments at 1.

<sup>24</sup> SIA Comments at 3.

Despite the many benefits of MSS, two commenters request that the Commission either eliminate the MSS allocation in the 2 GHz band or halve it from 40 to 20 MHz.<sup>25</sup> Such an action would jeopardize or incapacitate important satellite services, and ignores the reality of DISH's two orbiting satellites, built to operate on the full 40 MHz of spectrum.

AT&T's focus upon the limited MSS services provided to date disregards the nascent nature of the 2 GHz MSS markets, the challenges faced by two cash-strapped and ultimately bankrupt companies, and the band's significant MSS potential. 2 GHz MSS holds promise. But that promise has not been fulfilled for many reasons, including the constraints under which the previous 2 GHz MSS licensees had to labor. The ATC gating requirements prevented these companies—which were funded to meet minimum licensing requirements—from tapping the economies of scale that could only result from the provision of two vigorous services—one satellite, one terrestrial—over that spectrum. Commercial viability for MSS in the S-Band depends on a competitive terrestrial service as a complement. The forfeiture of this MSS potential, which would certainly result from a reduction or elimination of the MSS allocation, would harm, among others, the public safety community, and individuals and businesses in remote areas.

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<sup>25</sup> See AT&T Comments at 2-4; NTCH Comments at 8-9. AT&T mischaracterizes the Commission decisions that led to TerreStar's and DBSD's 20 MHz assignments when it argues that a single 20 MHz allocation should be sufficient for MSS. See AT&T Comments at 2-3. The Commission had been aware that more spectrum would be needed than the 8 MHz initially allocated to each MSS licensee. When making the 20 MHz assignments, the Commission also concluded that the remaining two licensees would "bring the spectrum into use more quickly" than if the spectrum were reallocated to other uses. It was for those reasons that the Commission reserved any returned spectrum for the remaining applicants. See *Use of Returned Spectrum in the 2 GHz Mobile Satellite Service Frequency Bands*, Order, 20 FCC Rcd. 19696, 19707-15 ¶¶ 26-42 (2005).

The attack on the MSS allocation is premised on the wrong question. The question is not whether 40 MHz of spectrum needs to be devoted exclusively to MSS. Rather, it is how much spectrum is needed to satisfy at the same time the demand for MSS *and* the exponentially growing demand for terrestrial mobile broadband. As AT&T acknowledges, “[e]xplosive growth in bandwidth consumptive wireless devices and services threatens to create a near-term spectrum capacity shortage.”<sup>26</sup> MSS services have to be accommodated even as an operator seeks to satisfy that demand. DISH believes that it will need at least 40 MHz to do both and compete effectively.

A reduction of the MSS spectrum would also disrupt the internationally harmonized MSS allocation of this band. International and, where possible, global consistency of a satellite service allocation is a valuable commodity. It permits satellite operators to achieve significant savings in the cost of space and ground assets, facilitates global roaming, and allows services to more than one country from the same satellite configuration. Here, the satellite community has secured a global allocation to MSS uplinks in the 1980-2010 MHz band and a Region 2 allocation (covering the Americas) to MSS uplinks in the 2010-2025 MHz band.<sup>27</sup> AT&T’s proposal that MSS uplinks be limited to the 2005-2015 MHz band would prevent U.S. operators from availing themselves of all but 5 MHz of the especially valuable globally harmonized MSS uplink spectrum and its concomitant benefits such as economies of scale in equipment.<sup>28</sup>

This is a question with immediate repercussions for DISH. DISH is working diligently to become an important contributor to the international MSS and terrestrial wireless ecosystem. In

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<sup>26</sup> AT&T Comments at 3.

<sup>27</sup> International Telecommunication Union, Radio Regulations 5-71 (2008); 47 C.F.R. § 2.106, Table of Frequency Allocations at 36.

<sup>28</sup> *See* AT&T Comments at 2.

addition to its authorizations to provide MSS in the United States, DISH holds an authorization to provide MSS in Canada over the 2000-2010 MHz and 2190-2200 MHz bands, and recently applied for a second Canadian MSS authorization in order to provide services over the 2010-2020 MHz and 2180-2190 MHz bands.<sup>29</sup> Further, a subsidiary of Hughes, a company owned by EchoStar,<sup>30</sup> recently purchased at auction the right to provide MSS to Brazil using the 1980-2025 MHz band for MSS uplinks. DISH has also made a significant new investment, at its own risk, in the development of the QUALCOMM EGAL chip, which will support integrated MSS/AWS devices capable of providing truly national connectivity to consumers. These development efforts are premised on existing spectrum allocations. A reduction in the U.S. MSS allocation would set back those efforts.

Calls for a reduction in the MSS spectrum allocation are also beyond the scope of the *NPRM*, and ignore the multi-tiered structure (allocation, service rules, and licensing) of the Commission's spectrum management system. For that reason, too, the Commission cannot eliminate MSS from half of the band by a single stroke of the eraser. Deleting part of an authorization would not be enough even if it were proper, which it is not. The Commission would have to change the Table of Allocations first—something that is beyond the scope of this licensing rulemaking proceeding. That additional process would only serve to further delay the mobile broadband service benefits DISH is ready to provide.<sup>31</sup>

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<sup>29</sup> See Letter from Michael Koch, Goodmans LLP, to Chantal Beaumier, Manager, Space Services – Authorization, Space and International Regulatory Activities, Radiocommunications and Broadcasting Regulatory Branch, Industry Canada, at Schedule A (May 16, 2012).

<sup>30</sup> As the Commission is aware, a substantial majority of the voting power of the shares of both DISH and EchoStar is owned beneficially by Charles W. Ergen, who is also Chairman of both companies, or by certain trusts established by Mr. Ergen for the benefit of his family.

<sup>31</sup> Finally, a reduction or elimination of the MSS allocation would be unlawful for all the reasons discussed below in connection with any diminution of DISH's spectrum rights.

### III. MILESTONES AND RELATED PENALTIES MUST BE ACHIEVABLE AND REASONABLE

A diverse group of commenters support reasonable buildout conditions and measured consequences for non-compliance. There is no basis for hamstringing DISH as a new entrant with an unrealistic schedule to which incumbents are not subject and which will ultimately delay service to the public.

DISH has proposed prudent variations to the Commission's proposed milestone schedule and sanctions. Under its proposal, DISH would be subject to a four-year interim milestone—providing coverage to a U.S. population of 60 million; and a seven-year milestone—providing coverage to 200 million people.<sup>32</sup> Failure to meet these milestones would not automatically result in license termination; rather, the Commission would consider a range of sanctions as appropriate depending on the severity of the lapse.<sup>33</sup>

There is little disagreement with the idea of imposing a seven-year milestone schedule, no doubt because it is so ambitious. Indeed, a number of commenters view the Commission's proposed milestone schedule as too aggressive. Alcatel-Lucent describes the proposed milestones as “draconian and [capable of] strand[ing] 2 GHz satellite and AWS-4 terrestrial customers without service.”<sup>34</sup> CCIA contends that “the proposed build-out timetable is overly aggressive and may prove difficult to comply with, even for the licensees making a good-faith effort to meet the Commission's benchmarks.”<sup>35</sup> Notably, AT&T has abandoned its earlier support for the super-expedited—and unachieved—LightSquared schedule, and now describes

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<sup>32</sup> DISH Comments at 19-24.

<sup>33</sup> *Id.* at 24-25.

<sup>34</sup> Alcatel-Lucent Comments at 16.

<sup>35</sup> CCIA Comments at 6.

the Commission's proposed requirements as "too stringent," cautioning the Commission that performance requirements should not be "unnecessarily punitive or overly aggressive."<sup>36</sup>

The comments therefore demonstrate broad support for the modest adjustments to the buildout schedule that DISH proposes. Even this modified schedule represents one of the fastest buildouts in the wireless industry to date.<sup>37</sup> Unlike incumbent operators that expand or upgrade their networks, DISH must start from scratch to deploy a new terrestrial network with a contiguous footprint that will ensure high-quality service. As a new entrant, DISH faces significant challenges in obtaining equipment and deploying cell sites.<sup>38</sup> Standards must be completed before equipment can be developed.<sup>39</sup> New S-Band mobile devices, base stations, and filters must be developed to meet regulatory requirements and LTE specifications.<sup>40</sup>

Tower siting, for example, will be challenging.<sup>41</sup> DISH must first identify tens of thousands of sites and then determine whether collocation is possible at each of them. Strategically located cell sites may be unavailable for collocation, as they are occupied by existing operators.<sup>42</sup> DISH will then be required to submit applications for cell sites in compliance with applicable zoning ordinances of state and local governments. If an application is denied, DISH will need to submit another application, which re-initiates the approval process.

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<sup>36</sup> AT&T Comments at 11-14.

<sup>37</sup> See DISH Comments at 18-22, Exhibit 4.

<sup>38</sup> *Id.* at 20.

<sup>39</sup> *Id.*

<sup>40</sup> *Id.* at 20-22.

<sup>41</sup> See Reply Declaration of David Zufall, Vice President for Wireless Development, DISH Network Corporation ¶¶ 6-9 (attached as Exhibit 1).

<sup>42</sup> Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, *Fifteenth Report*, 26 FCC Rcd. 9664, 9845 ¶ 318 (2011).

The delays experienced in this process have been well documented.<sup>43</sup> In this case, the process is likely to be more arduous because DISH intends to use small cells. This will facilitate spectral efficiency, but will require many more sites, associated leases, and zoning approvals compared to a traditional larger-cell infrastructure.

In light of these challenges, various and diverse carriers, equipment manufacturers, and trade associations all join DISH in the view that the “death penalty” of license termination should not be the automatic result of any lag behind on a milestone on the part of the licensee.<sup>44</sup> Indeed, CTIA correctly characterizes the sanction of automatic license cancellation for failure to meet a milestone as “unprecedented.”<sup>45</sup> MSUA and SIA agree that a loss of AWS-4 authority should not result in the loss of the DISH’s MSS authority.<sup>46</sup> Accordingly, the Commission should instead employ a range of sanctions tailored to the severity of any delay. Options for alternative sanctions could include reducing the length of the license term, implementing a remediation plan, or limiting the ability to obtain additional AWS licenses in other bands until buildout is completed.

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<sup>43</sup> *See id.* at 9843 ¶ 313.

<sup>44</sup> Nokia Comments at 5 (“[T]he Commission should adopt deployment and service conditions . . . that fall short of complete revocation of a license upon a missed interim or final milestone.”); RCA Comments at 6 (noting that the proposed buildout penalties are “too draconian,” in part because “the licensee would lose *all* of its authorizations”); MSUA Comments at 3 (urging “the Commission not to impose automatic termination of MSS authorizations” to protect users relying on the vital public safety features provided in the 2 GHz MSS band); SIA Comments at 4 (SIA “opposes the Commission’s current proposal to require automatic termination of an MSS authorization in any area where a companion terrestrial authorization is terminated for failure to meet the proposed AWS build out requirements.”); Alcatel-Lucent Comments at 16; CCIA Comments at 6-8; CTIA Comments at 16-17; AT&T Comments at 11-12.

<sup>45</sup> CTIA Comments at 17.

<sup>46</sup> MSUA Comments at 3; SIA Comments at 4.

Only one commenter, T-Mobile, requests an even more expedited schedule than the one proposed by the Commission—one that mirrors the LightSquared schedule. But even T-Mobile tempers its view by noting that “such an aggressive build-out schedule is neither necessary nor appropriate in most cases.”<sup>47</sup> Presumably, T-Mobile would protest such an aggressive schedule if imposed on T-Mobile itself, yet it argues that such a schedule is appropriate here. In fact, a requirement of breakneck speed is unnecessary and inappropriate here, too, just as it would be if imposed on T-Mobile’s own licenses.

As a threshold matter, LightSquared will not be meeting its buildout milestones, meaning that the feasibility of such a schedule cannot be tested. Moreover, the LightSquared conditions were adopted with LightSquared’s consent as part of a transaction, not as part of a rulemaking. They were also premised on a wholesale business model, whereas DISH will employ a retail business model, which will require significantly more time.<sup>48</sup> Indeed, at every step, a new retail service will face competitive pressure from incumbents with more experience and possibly a stranglehold on critical tower sites and other resources. To respond to these challenges, a new entrant must devote care and effort to the design and implementation of the service—from the prioritization of the primary and initial retail markets down to the network infrastructure and devices used.

Such a punishing schedule could force DISH to obtain cooperation from carriers that have existing infrastructure in order to meet buildout requirements. Whether DISH goes it alone or pursues partnerships to build out its terrestrial network, however, should be left to market forces, and not be the result of an artificially accelerated construction schedule.

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<sup>47</sup> T-Mobile Comments at 10.

<sup>48</sup> DISH Comments at 20-22.

#### **IV. PROMPT LICENSE MODIFICATION FOR THE FULL 40 MHz IS MOST CONSISTENT WITH THE LAW, THE FACTS, AND THE PUBLIC INTEREST**

Most commenters agree that the Commission has ample authority to take the action it has proposed here and modify DISH's authorizations. Doing so is the fastest way to get this spectrum deployed for the benefit of consumers. Any other option would be unwarranted, unlawful, and unduly delay the deployment of a new competitive mobile broadband service.

##### **A. The Commission's Authority to Modify DISH's Authorizations Is Unchallenged**

It is virtually undisputed that the Commission has authority to modify DISH's MSS and ATC authorizations as proposed under Section 316 of the Communications Act.<sup>49</sup> As DISH explained in its comments, the Commission's proposed use of Section 316 to modify DISH's authority to operate in the 2 GHz MSS band is consistent with the plain language of the statute, which confers on the Commission expansive authority to modify licenses when such action "will promote the public interest, convenience, and necessity,"<sup>50</sup> and is amply supported by precedent.<sup>51</sup> And as the U.S. GPS Industry Council notes, "the only way the Commission may permit the terrestrial use of the 2 GHz MSS band is by modifying the existing MSS licenses under Section 316 of the Communications Act."<sup>52</sup>

The Commission is therefore empowered to take the action it has proposed here and modify DISH's license. The public interest demands it as well, because modifying DISH's

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<sup>49</sup> 47 U.S.C. § 316. See DISH Comments at 15-18; RCA Comments at 4; U.S. GPS Industry Council Comments at 3.

<sup>50</sup> DISH Comments at 15-16 (citing 47 U.S.C. § 316; *California Metro Mobile Commc'ns v. FCC*, 365 F.3d 38, 45 (D.C. Cir. 2004)).

<sup>51</sup> DISH Comments at 16 (citing precedent).

<sup>52</sup> U.S. GPS Industry Council Comments at 3.

license is the fastest possible way to deploy the spectrum for consumer use. No party seriously disputes the Commission's authority to proceed as proposed and grant DISH AWS-4 authority.

**B. No Basis Exists for Conditioning DISH's Terrestrial Spectrum Rights on DISH Relinquishing Spectrum**

Unable to find a legal basis to block the Commission's proposal, a handful of commenters attempt to thwart DISH's competitive entry by advancing novel policy arguments to require or effectively coerce DISH to relinquish MSS or terrestrial rights to its spectrum.<sup>53</sup>

Regardless of the euphemisms used to suggest some voluntary element in these proposals, the reality is that they are attempting to unlawfully force a revocation of DISH's authority by tying the receipt of expanded terrestrial rights to the relinquishment of a portion of the authorizations that DISH has acquired and paid for through the secondary market and bankruptcy process.<sup>54</sup>

They also are requesting that regulatory handcuffs be placed on a new competitor.

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<sup>53</sup> MetroPCS proposes that DISH relinquish or give back "20 MHz of spectrum in exchange for being granted terrestrial licenses and increased flexibility in the use of its remaining 20 MHz of spectrum[, with the] returned spectrum . . . then . . . auctioned by the Commission for use by competitive carriers to be put to its highest and best use." MetroPCS Comments at 29-30. NTCH, for its part, asks the Commission to explore the option of eliminating DISH's existing MSS and ATC authority and compensating DISH with an auction credit. NTCH Comments at 7-8. And even T-Mobile, which supports the Commission decision to promote flexibility in the use of the 2 GHz MSS allocation, suggests, as a possible alternative, that DISH be asked to "return" half of its licensed spectrum capacity. T-Mobile Comments at 17-18.

<sup>54</sup> An effort to coerce a "choice" of surrender is, of course, indistinguishable from an attempt at license revocation. Underlying some commenters' call for seizure of DISH's spectrum (and, effectively, DISH's existing facilities) is the implication that DISH is receiving a "windfall." This is wrong. DISH spent nearly \$3 billion to acquire the MSS/ATC licenses in an open and transparent bankruptcy auction that was praised by the bankruptcy judge as a "win-win" for the company and its creditors. Transcript of Hearing at 43, DBSD North America, Inc., No. 09-13061 (Bankr. S.D.N.Y. Mar. 16, 2011). The Commission also considered and rejected this windfall argument when it initially authorized ATC, noting that it was an inadequate basis for withholding from the public the benefits of additional and enhanced services. In light of this reality, the Commission observed that "granting, rather than withholding, access to spectrum resources represents the better course." Flexibility for Delivery of Communications by Mobile Satellite Service Providers, *Report and Order and Notice of Proposed Rulemaking*, 18 FCC Rcd.

As a threshold matter, DISH’s MSS/ATC licenses cannot be revoked, in whole or in part, without a hearing. Since these commenters do not dwell on the compulsory element of the action they propose, they also omit any discussion of the statutory prerequisites to such action. The Commission’s license modification authority under Section 316 does not include the power to significantly diminish, eliminate, or “fundamental[ly] change” the nature of the service that a licensee may provide under an existing license.<sup>55</sup> A reduction in DISH’s spectrum assignment would be just such a diminution, partial elimination, and fundamental change. Thus, there is a vast difference between modifying a license under Section 316 of the Communications Act (as the Commission proposes in the *NPRM*) and taking away spectrum, which would be akin to revoking the license in full or part—an action that is subject to another statutory provision, Section 312.<sup>56</sup> That section restrictively lists the circumstances, all related to licensee

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1962, 1965 ¶ 2 (2003). Even if the Commission had not previously addressed such claims, DBSD and TerreStar already held ATC authority when DISH acquired them. The additional flexibility proposed for DISH’s licenses does not change the underlying premise of shared spectrum for MSS/terrestrial services that ATC authority always envisioned.

<sup>55</sup> *MCI v. AT&T*, 512 U.S. 218, 228 (1994). In finding that a significant diminution or elimination is beyond the scope of a modification, the Supreme Court colorfully stated: “It might be good English to say that the French Revolution ‘modified’ the status of the French nobility but only because there is a figure of speech called understatement and a literary device known as sarcasm.” *Id.* See also License Communications Services, Inc. Licensee of Industrial/Business Pool (YG) Station WPQF492, Los Angeles County, California, Petition for Partial Reconsideration and Request for Further Modification of License, *Order*, 24 FCC Rcd. 3228, 3231 ¶ 9 n.28 (2009) (a purported modification deleting 40 percent of the frequencies of a licensee has the “cumulative effect” of revoking the license entirely, which entails “additional procedural requirements”).

<sup>56</sup> 47 U.S.C. § 312.

misconduct, that warrant a revocation.<sup>57</sup> None of these circumstances is present here, and Section 312 would require a hearing even if one were met.<sup>58</sup>

Taking back any part of the 2 GHz spectrum (or, for that matter, reducing the MSS authorization for that spectrum) would also be impermissibly retroactive, because it would both attach a new consequence (loss of spectrum rights) to past actions (the transfer of the DBSD and TerreStar licenses to DISH).<sup>59</sup> It would also upset DISH's expectation that it would be able to provide MSS augmented by a terrestrial component over the entire 40 MHz allocation. DISH was fully justified in having that expectation and acting upon it when it invested in the 2 GHz spectrum licenses and assets. Forfeiture of part of that authority would unduly offend this expectation and would thus be retroactive in the secondary sense, too.

A revocation of any portion of the MSS spectrum would also amount to a regulatory taking of DISH's related physical assets, its MSS satellites. DISH made a significant investment to acquire two in-orbit satellites, significant earth station facilities, and a nearly completed satellite designed to operate in the 2 GHz spectrum, collectively valued at over \$900 million. The value of these assets would be hampered, if not obliterated, to the extent that DISH were prevented from using its licensed spectrum with those assets. DISH's satellites are capable of operating across 40 MHz, and DISH's authority allows them to do so today.

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<sup>57</sup> 47 U.S.C. § 312(a).

<sup>58</sup> 47 U.S.C. § 312(c). The hearing requirement is not obviated by the supposed "rough justice" of a *quid pro quo* suggested by some. There is no precedent suggesting that the hearing requirement can be bypassed if the licensee receives a supposed benefit "in return" for the revocation.

<sup>59</sup> It is settled law that "[a]n agency may not promulgate retroactive rules without express congressional authorization." *Arkema Inc. v. EPA*, 618 F.3d 1, 7 (D.C. Cir. 2010) (citing *Bowen v. Georgetown Univ. Hosp.*, 488 U.S. 204, 208 (1988)). Furthermore, it is equally well-established that Congress has not authorized the Commission to promulgate retroactive rules. *Jahn v. 1-800-FLOWERS.com, Inc.*, 284 F.3d 807, 810 (7th Cir. 2002).

The *NPRM* correctly does not propose or even mention the possibility of any of the actions raised by these commenters. This also means that these actions lie outside the scope of this rulemaking proceeding; they thus could not be taken in response to the *NPRM* even if they were proper, which they are not.

MetroPCS unavailingly quotes the National Broadband Plan's statement that "[e]xercise of this option should be conditioned on construction benchmarks, participation in an incentive auction, or other conditions designed to ensure timely utilization of the spectrum for broadband and appropriate consideration for the step-up in the value of the affected spectrum."<sup>60</sup> As revealed by the reference to incentive auctions, this is no more than a disjunctive menu of alternative measures.<sup>61</sup> In any event, the *NPRM* does propose to condition DISH's authority on aggressive construction benchmarks.<sup>62</sup> Those benchmarks would be among the strictest ever imposed even if moderated as DISH requests, and would cost many billions of dollars to meet.

Modifying DISH's license is the fastest possible way to get the spectrum deployed for consumer use. The spectrum would be licensed to an entity who is ready, willing, and able to take advantage of it and committed to doing so under an aggressive timetable. The modification of DISH's license will thus most likely result in service to significant portions of the country within four years.

In stark contrast, an auction would delay the deployment of the spectrum given the myriad of issues involved. To detail just a few of these issues, if the Commission were to make the incorrect decision to go to auction: it would have to defend against potential legal challenges

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<sup>60</sup> National Broadband Plan at 88.

<sup>61</sup> For example, as discussed in Section IV.C below, the incentive auction alternative was not chosen by Congress for this band.

<sup>62</sup> *NPRM* ¶¶ 92-96.

regarding the rights of existing 2 GHz licensees; it would have to defend the legality of going forward with an auction, which, as described below, is in serious doubt here; it would have to set procedures for an auction; it would have to administer the auction; and it would have to assign the licenses. If history is any guide, these processes could easily take over six years.<sup>63</sup> Only then would the licensees be able to begin the deployment process that DISH can and will begin as soon as this rulemaking concludes.

**C. An Incentive Auction Is Not Authorized by Law, and DISH Would Not Choose It in the First Place**

Some commenters nevertheless propose moving forward through an incentive auction,<sup>64</sup> *i.e.*, a process where existing licensees are encouraged to surrender their licenses voluntarily so that their spectrum can be auctioned. But an incentive auction is not authorized by statute, and would not be chosen by DISH.

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<sup>63</sup> See National Broadband Plan at 79, Exhibit 5-C.

<sup>64</sup> See NTCH Comments at 3-8; ITI Comments at 2; MetroPCS Comments at 29-36, 39-40; TIA Comments at 13-14; T-Mobile Comments at 18-23. NTCH goes so far to argue that an auction is required here, citing the D.C. Circuit's decision in *Fresno Mobile Radio, Inc. v. FCC*, 165 F.3d 965 (D.C. Cir. 1999). In that decision, the court did not find that an auction was required, only that the Commission was permitted to conduct one in vastly different circumstances (including, among other things, a liberalized buildout rule for licensees—the reverse of what the Commission is proposing here). The Commission has often used its Section 316 authority to avoid mutual exclusivity and auctions, including several times since *Fresno*. See Spectrum and Service Rules for Ancillary Terrestrial Components in the 1.6/2.4 GHz Big LEO Bands, *Second Order on Reconsideration, Second Report and Order, and Notice of Proposed Rulemaking*, 22 FCC Rcd. 19733, 19752 ¶ 43 (2007); see also Spectrum and Service Rules for Ancillary Terrestrial Components in the 1.6/2.4 GHz Big LEO Bands, *Report and Order and Order Proposing Modification*, 23 FCC Rcd. 7210, 7210 ¶ 1 (2008); Use of Returned Spectrum in the 2 GHz Mobile Satellite Service Frequency Bands, *Order*, 20 FCC Rcd. 19696, 19705-06 ¶¶ 21-22 (2005); Improving Public Safety Communications in the 800 MHz Band, *Memorandum Opinion and Order*, 20 FCC Rcd. 16015, 16045 ¶ 69 (2005) (“We reaffirm our conclusion that the grant to Nextel of access to 1.9 GHz spectrum was well within the scope of the Commission’s Section 316 license modification authority and past precedent, and that the Commission was not precluded from granting such rights by license modification . . .”).

The only possible source of Commission authority to conduct incentive auctions in the 2 GHz band is the recently enacted Middle Class Tax Relief and Job Creation Act of 2012 (the “Act”), which allows the Commission to “encourage a licensee to relinquish voluntarily some or all of its licensed spectrum,”<sup>65</sup> and then permits the Commission to conduct an auction if spectrum is relinquished. But the Act specifically provides that the Commission may not conduct an incentive auction unless two prerequisites are met: (a) the Commission must first conduct a reverse auction to determine the compensation that existing licensees would accept, and (b) there must be “at least two competing licensees participat[ing] in the reverse auction.”<sup>66</sup> The 2 GHz MSS/ATC band cannot meet these prerequisites because there are *no competing licensees* in the band.<sup>67</sup>

Of course, even if incentive auctions were available for the 2 GHz band under the Act, any such auction for DISH’s 2 GHz spectrum would not be truly voluntary, as DISH would be coerced into this course of action on pain of not securing expanded terrestrial rights. In any event, the question is moot. If confronted with the incentive auction choice that NTCH proposes, DISH would not relinquish its spectrum. It would instead keep it and put it to its best possible use.

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<sup>65</sup> Pub. L. No. 112-96 § 6402.

<sup>66</sup> *Id.*

<sup>67</sup> Moreover, there is no legal authority for the Commission to design an auction so that DISH starts the bidding with a credit. *See* NTCH Comments at 7. Congress has required the Commission to ensure that small businesses, rural telephone companies, and businesses owned by members of minority groups or women are given the opportunity to participate in the provision of spectrum-based service. It is “for such purposes” that the Commission must “consider the use of tax certificates, bidding preferences, and other procedures.” 47 U.S.C. § 309(j)(4).

## V. A SHIFT OF THE AWS-4 UPLINK BAND IS UNNECESSARY AND WOULD NOT SERVE THE PUBLIC INTEREST

Commenters supporting an upward migration of the 2000-2020 MHz band cannot agree on how much of a move is necessary or on the benefits that would accrue from it.<sup>68</sup> In fact, a move is not necessary to protect adjacent operations, and all of these proposals would actually *create* interference problems by abutting AWS-4 uplink operations to BAS and government users of the 2025-2110 MHz band. Any shift would also undermine mobile broadband competition, undercut international spectrum harmonization, and infringe DISH's rights as a licensee.

### A. A Shift Is Unnecessary

Sprint's view of the 3GPP specifications should lay to rest any question relating to the out-of-band emission ("OOBE") limits necessary to protect PCS operations for purposes of this rulemaking. According to Sprint, which has a direct stake in the matter by virtue of its authority to use the PCS G Block, compliance with the final and pending 3GPP specifications will be "sufficient to address harmful interference from [DISH's proposed] MSS [and terrestrial] operations in the 2000-2020 MHz band into current or planned Personal Communications Services ("PCS") operations in the G Block and other PCS bands . . . ."<sup>69</sup>

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<sup>68</sup> AT&T proposes moving the AWS-4 to 2005-2025 MHz so that both the 1995-2000 MHz and 2000-2005 MHz bands can be maintained as guard bands. *See* AT&T Comments at 7-9. Sprint suggests that a 5 MHz guard band at 2000-2005 MHz would better protect both the G and H Blocks. *See* Sprint Comments at 11. T-Mobile asks the Commission to take "affirmative measures to protect PCS operations." T-Mobile Comments at 24. U.S. Cellular calls for a 10 MHz guard band from 2000-2010 MHz to protect the H Block. *See* U.S. Cellular Comments at 5-6; *see also* Motorola Mobility Comments at 3-4.

<sup>69</sup> Letter from Marc S. Martin, Counsel for Sprint Nextel Corporation, to Marlene Dortch, Secretary, Federal Communications Commission, IB Docket Nos. 11-149, 11-150, at 2 (Nov. 17, 2011).

As for the AWS H Block (1995-2000 MHz), imposing a limit of  $43+10*\log_{10}(P)$  dB at 2000 MHz along with linear interpolation to  $70+10*\log_{10}(P)$  dB (measured in watts) at 1995 MHz is an appropriate OOB limit.<sup>70</sup> Notably, this is the “middle-road” among the three alternative OOB limits identified by the Commission.<sup>71</sup> A combination of this mask and reasonable OOB and power limits on H Block operations would be enough to protect both bands.<sup>72</sup> Of course, this rulemaking does not provide the right place or the right time to resolve all the possible technical issues relating to H Block operations, much less formulate technical rules. Future proceedings will be required to achieve those ends. But there is no need for 2 GHz band’s deployment to be held up by such proceedings, which may take the better part of a decade.

Nor is a move necessary to foster efficient use of the AWS-4 uplink spectrum, as AT&T and Sprint contend.<sup>73</sup> Advanced handset design can accommodate these limits without significant impact on frequency usage or efficiency.<sup>74</sup> While DISH is working on completing standards, filter manufacturers are in the process of improving the temperature compensation of device duplexers and readying the technology for mass production. With temperature compensated filters and other technology advancements such as greater reduction of the local

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<sup>70</sup> Sorond Declaration ¶ 4 (DISH Comments, Exhibit 3).

<sup>71</sup> *NPRM* ¶¶ 36-39.

<sup>72</sup> Sorond Declaration ¶ 5.

<sup>73</sup> See AT&T Comments at 6-7; Sprint Comments at 11. To the extent there were interference concerns into the MSS and AWS-4 uplink from the H Block, a 5 MHz guard band would not help, because the satellites would still operate in the 2000-2005 MHz band, and the MSS uplink would be still be vulnerable to thousands of transmissions from H Block base stations. For that reason, too, the answer is the imposition of appropriate limits, including on H Block operations, and not a spectrum move.

<sup>74</sup> See Reply Declaration of Mariam Sorond, Vice President for Technology Development, DISH Network Corporation ¶ 3 (“Sorond Reply Declaration”) (attached as Exhibit 2).

oscillator amplitude, DISH expects the Additional Maximum Power Reduction (“A-MPR”)<sup>75</sup> required to meet the proposed mask of  $43+10*\log_{10}(P)$  dB at 2000 MHz, with linear interpolation measured in watts to  $70+10*\log_{10}(P)$  dB at 1995 MHz, to be reduced by the time of the system launch.<sup>76</sup> These technical advancements will facilitate a more economical deployment of the full S-Band spectrum for wireless broadband.

Unlike other bands where the existence of legacy equipment hinders the use of more aggressive OOB limits, new service bands such as AWS-4 have the advantage of permitting operators to design all the transmitting equipment to accommodate more stringent requirements.<sup>77</sup> For that reason, DISH believes it can mitigate the “negative impact” on AWS-4 transmissions identified as a concern by the Commission,<sup>78</sup> and is thus prepared to accept the middle-road alternative proposed by the Commission.<sup>79</sup> This OOB limit is also similar to the masks applicable to other broadband frequency bands. For example, the 3GPP Band 13 public safety protection requirement is set at  $65+10*\log_{10}(P)$  dB at 2 MHz away. This translates into a maximum A-MPR of 12 dB.<sup>80</sup> Similarly, 3GPP Band 26 OOB limits correspond to a maximum A-MPR value of 9 dB.<sup>81</sup> Additionally, 3GPP specifications will be optimized for a

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<sup>75</sup> A-MPR is an allowed reduction in device transmit power to meet a target emissions level, as defined by 3GPP specifications. The amount of A-MPR required depends on the device RF component specifications and the transmit filter response.

<sup>76</sup> Sorond Reply Declaration ¶ 3.

<sup>77</sup> *Id.* ¶ 4.

<sup>78</sup> *NPRM* ¶ 37.

<sup>79</sup> *See id.*

<sup>80</sup> Sorond Reply Declaration ¶ 5.

<sup>81</sup> *Id.*

better configuration of Band 23 once duplexers are considered in the next few months when standards are updated.<sup>82</sup>

In sum, appropriately designed devices can operate within the technical limits proposed in DISH's Comments and contemplated by the *NPRM* to provide a competitive service without disruptive band plan changes.<sup>83</sup>

**B. A Shift Would Create Coordination Challenges with Operations Above 2025 MHz**

While not necessary to solve a problem, a shift would create many, both to the 2 GHz band and for neighboring operations. The Engineers for the Integrity of Broadcast Auxiliary Services Spectrum ("EIBASS") correctly point out the challenges of coordinating AWS-4 operations in the 2020-2025 band with BAS operations above 2025 MHz.<sup>84</sup> To compound the problem, private BAS operators are not the only users above 2025 MHz. Government users of varying types use the 2025-2110 MHz band for satellite uplink communications. NASA, for example, currently has 209 Radio Frequency Assignments in the band. These operations employ high-powered uplinks from earth stations to the satellites that form the Tracking and Data Relay Satellite System ("TDRSS"), which provides links between low earth orbiting spacecraft and earth stations. To communicate with the TDRSS satellites, these earth stations employ high power, high gain antennas as large as 15 meters in diameter operating at elevation angles that

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<sup>82</sup> *Id.* ¶ 4. One commenter has called for the extension of Section 25.255 of the Commission's rules to AWS-4. U.S. GPS Industry Council Comments at 9-10. Such an extension is not warranted. The Section 25.255 condition applies to secondary ATC systems only. But this entire rulemaking is about establishing rules for a co-primary terrestrial service under Part 27. Co-primary status means that avoiding interference should be a shared burden of the two systems rather than a burden falling exclusively or primarily on one service as would be the case under this proposal.

<sup>83</sup> DISH Comments at 26-30.

<sup>84</sup> *See* EIBASS Comments at 3.

may cause interference to any AWS-4 base station receiver within a significant radius. The National Telecommunications and Information Administration (“NTIA”) has also proposed the future relocation of government users from the 1755-1850 MHz band to the 2025-2110 MHz band,<sup>85</sup> which would increase the risk of harmful interference to operations below 2025 MHz.<sup>86</sup>

The current 5 MHz separation at 2020-2025 MHz enables the AWS-4 base station to reject the in-band, high power emissions of BAS and government earth stations above 2025 MHz.<sup>87</sup> If the AWS-4 uplink is moved directly adjacent to these high power operations, however, it could cause receiver overload for the S-Band base station.<sup>88</sup> In short, moving the AWS-4 uplink adjacent to BAS and government operations in the 2025-2110 MHz band risks rendering AWS-4 services unusable in large regions, often in more densely populated areas.<sup>89</sup>

**C. A Shift Would Delay Mobile Broadband Competition, Undermine Global MSS Harmonization, and Improperly Curtail DISH’s Rights**

A move of the 2 GHz MSS/AWS-4 uplinks would also complicate and delay new mobile broadband competition by undermining the potential for global harmonization, and render DISH’s MSS satellites useless in large part.

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<sup>85</sup> See U.S. Department of Commerce, An Assessment of the Viability of Accommodating Wireless Broadband in the 1755-1850 MHz Band (March 2012), *available at* [http://www.ntia.doc.gov/files/ntia/publications/ntia\\_1755\\_1850\\_mhz\\_report\\_march2012.pdf](http://www.ntia.doc.gov/files/ntia/publications/ntia_1755_1850_mhz_report_march2012.pdf). That report identified the 2025-2110 MHz band for possible relocation of a variety of systems, including Military Tactical Radio Relay, Air Combat Training Systems, and Aeronautical Mobile Telemetry. These additional systems could further compound the difficulties of shifting AWS-4 upward.

<sup>86</sup> Sorond Reply Declaration ¶ 6.

<sup>87</sup> *Id.* ¶ 7.

<sup>88</sup> *Id.*

<sup>89</sup> *Id.*

The current 10 MHz overlap with the global uplink allocation, coupled with the 20 MHz overlap with the global downlink allocation, could accommodate global roaming in the S-Band.<sup>90</sup> But an upward move of the MSS/AWS-4 uplinks would reduce or altogether eliminate the overlap.<sup>91</sup> This would undercut international spectrum harmonization, which in turn would increase the cost, and even potentially the availability, of global roaming on these frequencies, and eliminate the economies of scale on device components that could be shared among different regions.

Moreover, a migration of the uplinks would undermine the salutary consistency that has been achieved between the U.S. and European MSS/ATC allocations. In 2008, the European Union (“EU”) authorized the use of 60 MHz of S-Band spectrum for MSS (1980-2010 MHz uplink and 2170-2200 MHz downlink).<sup>92</sup> The EU also authorized MSS licensees to provide a terrestrial service referred to as the “Complementary Ground Component,” consistent with the U.S. allocation.<sup>93</sup>

Finally, even without the spectrum reduction requested by some, a move would prevent DISH from using all 20 MHz of satellite uplink spectrum, for the simple reason that its satellites cannot receive transmissions above 2020 MHz, triggering the legal issues identified above.

## **VI. POTENTIAL CONDITIONS ARE UNNECESSARY**

Contrary to the Commission’s objectives of providing much needed flexibility to the 2 GHz band and of eliminating the prescriptive rules that have frustrated deployments in this band,

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<sup>90</sup> *Id.* ¶ 8.

<sup>91</sup> *Id.*

<sup>92</sup> See Decision No. 626/2008, of the European Parliament and of the Council of 30 June 2008 on the Selection and Authorisation of Systems Providing Mobile Satellite Services, 2008 O.J. (L 172) 15.

<sup>93</sup> *Id.* ¶ 8.

some commenters suggest a series of restrictions in which they seek to dictate and limit DISH's business plan and network operations. There is no basis for such restrictions.

RCA and the New America Foundation, Public Knowledge, and Consumers Union (the "Public Interest Parties") propose roaming and wholesale conditions.<sup>94</sup> While DISH will certainly consider and may enter into partnership agreements as it builds out its network, DISH's business plans should be allowed to evolve based on consumer demand and market realities.

The Public Interest Parties, T-Mobile, and RCA argue that there should be restrictions placed on DISH's ability to enter into capacity agreements.<sup>95</sup> Yet DISH's plans are for a retail service, so this focus seems misplaced. Furthermore, to the extent DISH enters into capacity agreements in some areas, forcing DISH to obtain otherwise unnecessary Commission approvals will only slow deployment to consumers. No other wireless competitor operating today is subject to these restrictions.

RCA and the Public Interest Parties seek to impose an unjust enrichment penalty if DISH transfers its licenses to AT&T or Verizon.<sup>96</sup> These commenters, however, offer no statutory basis or Commission precedent to support such a departure from the Commission's secondary market policies.

Finally, T-Mobile suggests that DISH should have to file biannual reports regarding the buildout of its licenses if its licenses are modified.<sup>97</sup> There is no public interest rationale for such a condition. The Commission has not imposed such a requirement on incumbent carriers who

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<sup>94</sup> RCA Comments at 6-8; Public Interest Parties Comments at 8-11.

<sup>95</sup> RCA Comments at 7-8; T-Mobile Comments at 15-17; Public Interest Parties Comments at 8-13.

<sup>96</sup> See RCA Comments at 5, 11-12; Public Interest Parties Comments at 3.

<sup>97</sup> T-Mobile Comments at 15.

are also subject to buildout milestones under their 700 MHz and AWS licenses, and there is no reason for a new entrant to be subject to more onerous treatment.<sup>98</sup>

## **VII. THE 2 GHZ EXTENSION BAND CONCEPT SHOULD NOT BE ADOPTED**

The record also reflects skepticism about the 2 GHz Extension Band Concept raised in the *NOI*. U.S. Cellular opposes the concept altogether. While a few commenters support exploring the idea, the record demonstrates that it cannot be implemented in a reasonable timeframe. The Extension Band Concept would also face significant legal and public policy hurdles.

The Extension Band Concept suffers from a regulatory vacuum that cannot be filled quickly. As outlined by the NTIA, service rules are necessary to protect the incumbent government operations.<sup>99</sup> Among other things, wireless services will have to observe a potentially large number of exclusion zones, to be identified by the NTIA. Until these service rules are promulgated, it is very difficult to determine how these requirements would affect the cost and complexity of the 2 GHz Extension Band Concept. The cost impact, however, is likely to be much greater than the cost of reasonable limits on S-Band and H Block operations discussed above.

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<sup>98</sup> UTAM also requests a license condition that would require DISH to pay \$12.7 million that UTAM claims it would have received from future H Block licensees for its efforts to clear the H Block. *See* Comments of UTAM, Inc. at 2 (May 18, 2012). DISH is not an existing or prospective H Block licensee and will receive no direct or indirect benefits from UTAM's band-clearing efforts. Granting UTAM's reimbursement request under these circumstances would be unwarranted, unprecedented, and without legal basis.

<sup>99</sup> U.S. Department of Commerce, *An Assessment of the Near-Term Viability of Accommodating Wireless Broadband Systems in the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, and 4200-4220, 4380-4400 MHz Bands*, at 1-6 (Oct. 2010).

The Commission also recognizes that the 30 MHz PCS-Extension Block would be unpaired downlink spectrum.<sup>100</sup> This spectrum would thus require a matching uplink block. The need to identify that block would cause even further delay. On the other hand, leaving the PCS-Extension Block as an unpaired downlink block would consign it to being used only to enhance the downlink capacity of incumbent carriers instead of accommodating new mobile broadband entrants.

Furthermore, to the extent that the 2 GHz Extension Band Concept is intended to avoid perceived uplink/downlink interference issues between the S-Band and the H Block, these problems are illusory as discussed above, since reasonable limits on both operations coupled with soon-to-be commercially feasible new filter technology obviate any need for an AWS-4 move.

## **VIII. CONCLUSION**

The Commission should move quickly to adopt the proposals made in the *NPRM*, with the modifications suggested by DISH, as they represent the only means to take advantage of the opportunity at hand to give consumers more mobile broadband spectrum in a timely manner, preserve MSS, and enhance competition.

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<sup>100</sup> *NOI* ¶ 143.

Respectfully submitted,

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and Secretary  
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June 1, 2012

**EXHIBIT 1: REPLY DECLARATION OF DAVID ZUFALL**

## **REPLY DECLARATION OF DAVID ZUFALL**

I, David Zufall, being over 18 years of age, swear and affirm as follows:

1. I make this declaration in support of the reply comments of DISH Network Corporation (“DISH”) filed in WT Docket Nos. 12-70 and 04-356 and ET Docket No. 10-142 (FCC 12-32). This declaration will focus on issues related to the steps DISH is taking in order to use its Mobile-Satellite Service (“MSS”) authorizations, and on some of the challenges it will face in deploying a terrestrial mobile broadband network in the 2 GHz band.

2. I am Vice President for Wireless Development for DISH Network L.L.C. In this role, I am overseeing the development and planning of a terrestrial wireless network system in the 2 GHz band. Before DBSD North America, Inc. (“DBSD”) was acquired by DISH, I was a Senior Vice President for Technology Development at DBSD and oversaw its network systems. I am an engineer by training.

3. In addition to its authorizations to provide MSS in the United States, DISH holds an authorization to provide MSS in Canada over the 2000-2010 MHz and 2190-2200 MHz bands. DISH also applied earlier this month for a second Canadian MSS authorization in order to provide services over the 2010-2020 MHz and 2180-2190 MHz bands.

4. A subsidiary of Hughes, a company owned by EchoStar, recently purchased at auction the right to provide MSS to Brazil using the 1980-2025 MHz band for MSS uplinks. As the Commission is aware, a substantial majority of the voting power of the shares of both DISH and EchoStar is owned beneficially by Charles W. Ergen, who is also Chairman of both companies, or by certain trusts established by Mr. Ergen for the benefit of his family.

5. DISH has also made a significant new investment, at its own risk, in the development of the QUALCOMM EGAL chip, which will support integrated MSS/AWS

devices capable of providing truly national connectivity to consumers. These development are premised on existing spectrum allocations.

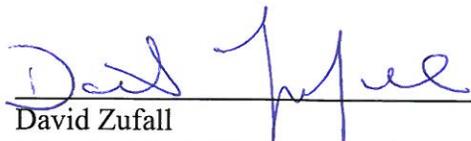
6. DISH must start from scratch to deploy a completely new terrestrial network with a contiguous footprint that will ensure high-quality service. As a new entrant, DISH faces significant challenges in obtaining equipment and deploying cell sites. Standards must be completed before equipment can be developed. New S-Band mobile devices, base stations, and filters must be developed to meet regulatory requirements and LTE specifications.

7. Tower siting, for example, will be challenging. DISH must first identify tens of thousands of sites and then determine whether collocation is possible at each of them. Strategically located cell sites may be unavailable for collocation, as they are occupied by existing operators.

8. DISH will then be required to submit applications for cell sites in compliance with applicable zoning ordinances of state and local governments. If an application is denied, DISH will need to submit another application, which re-initiates the approval process.

9. The delays experienced in this process have been well documented. In this case, the process is likely to be more arduous because DISH intends to use small cells. This will facilitate spectral efficiency, but will require many more sites, associated leases, and zoning approvals compared to a traditional larger-cell infrastructure.

The foregoing declaration has been prepared using facts of which I have personal knowledge or belief or upon information provided to me. I declare under penalty of perjury that the foregoing is true and correct to the best of my information, knowledge, and belief.



David Zufall  
Vice President, Wireless Development  
DISH Network L.L.C.

June 1, 2012

**EXHIBIT 2: REPLY DECLARATION OF MARIAM SOROND**

## **REPLY DECLARATION OF MARIAM SOROND**

I, Mariam Sorond, being over 18 years of age, swear and affirm as follows:

1. I make this declaration in support of the reply comments of DISH Network Corporation (“DISH”) filed in WT Docket Nos. 12-70 and 04-356 and ET Docket No. 10-142 (FCC 12-32). This declaration will focus on technical issues related to the deployment of a terrestrial mobile broadband network in the 2 GHz band.

2. I am Vice President for Technology Development for DISH Network L.L.C. In this role, I am overseeing the technical analysis of operations in the 2 GHz band. Before DBSD North America, Inc. (“DBSD”) was acquired by DISH, I was a Vice President for Technology Development at DBSD and oversaw its systems technology development. I am an engineer by training. I offer this declaration in support of certain technical statements in the reply comments. As I have stated in my Declaration accompanying DISH’s Comments in this proceeding, reasonable limits on 2 GHz uplink operations at 2000-2020 MHz, and on H Block operations at 1995-2000 MHz, would obviate any need for an upward move of the Advanced Wireless Service (“AWS-4”) 2 GHz band uplinks.

3. Advanced handset design can accommodate out-of-band emission (“OOBE”) limits for the H Block and G Block, as proposed by DISH, without significant impact on AWS-4 frequency usage or efficiency. While DISH is working on completing standards, filter manufacturers are in the process of improving the temperature compensation of device duplexers and readying the technology for mass production. With temperature compensated filters and other technology advancements such as greater reduction of the local oscillator amplitude, DISH

expects the Additional Maximum Power Reduction (“A-MPR”)<sup>1</sup> required to meet the proposed mask of  $43+10*\log_{10}(P)$  dB at 2000 MHz, with linear interpolation measured in watts to  $70+10*\log_{10}(P)$  dB at 1995 MHz, to be reduced by the time of the system launch.

4. Unlike other bands where the existence of legacy equipment hinders the use of more aggressive OOB limits, new service bands such as AWS-4 have the advantage of permitting operators to design all the transmitting equipment to accommodate more stringent requirements. For that reason, DISH believes it can mitigate the “negative impact” on AWS-4 transmissions identified as a concern by the Commission, and is thus prepared to accept the middle-road alternative proposed by the Commission.

5. This OOB limit is also similar to the masks applicable to other broadband frequency bands. For example, the 3GPP Band 13 public safety protection requirement is set at  $65+10*\log_{10}(P)$  dB at 2 MHz away. This translates into a maximum A-MPR of 12 dB. Similarly, 3GPP Band 26 OOB limits correspond to a maximum A-MPR value of 9 dB. Additionally, 3GPP specifications will be optimized for a better configuration of Band 23 once duplexers are considered in the next few months when standards are updated.

6. The proposed relocation of government users from the 1755-1850 MHz band to the 2025-2110 MHz band would increase the risk of harmful interference to operations below 2025 MHz.

7. The current 5 MHz separation at 2020-2025 MHz enables the AWS-4 base station to reject the in-band, high power emissions of Broadcast Auxiliary Service (“BAS”) and government earth stations above 2025 MHz. If the AWS-4 uplink is moved directly adjacent to

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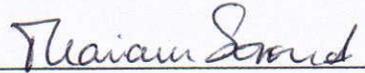
<sup>1</sup> A-MPR is an allowed reduction in device transmit power to meet a target emissions level, as defined by 3GPP specifications. The amount of A-MPR required depends on the device RF component specifications and the transmit filter response.

high power operations, however, it could cause receiver overload for the S-Band base station.

In short, moving the AWS-4 uplink adjacent to BAS and government operations in the 2025-2110 MHz band risks rendering AWS-4 services unusable in large regions, often in more densely populated areas.

8. The current 10 MHz overlap with the global uplink allocation, coupled with the 20 MHz overlap with the global downlink allocation, could accommodate global roaming in the S-Band. But an upward move of the new MSS/AWS-4 uplinks would reduce or altogether eliminate the overlap.

The foregoing declaration has been prepared using facts of which I have personal knowledge or belief or upon information provided to me. I declare under penalty of perjury that the foregoing is true and correct to the best of my information, knowledge, and belief.



Mariam Sorond  
Mariam Sorond  
Vice President, Technology Development  
DISH Network L.L.C.

June 1, 2012