Before the
Federal Communications Commission
Washington DC 20554

In the Matter of	)	
	)	
Fixed Wireless Communications Coalition,	)	RM-11778
Inc., Request for Modified Coordination	)	
Procedures in Bands Shared Between the Fixed	)	
Service and the Fixed Satellite Service	)	

REPLY COMMENTS OF THE FIXED WIRELESS COMMUNICATIONS COALITION

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The Fixed Wireless Communications Coalition (FWCC) replies to Oppositions and Comments filed in the above-captioned docket.[1]

The FWCC's petition asks the Commission to amend its rules so as to limit the frequency coordination of the Fixed Satellite Service (FSS) to the frequencies, azimuths, and elevation angles the earth stations actually use, in bands shared with the Fixed Service (FS) below 24 GHz, namely, 3.7-4.2 GHz, 5.925-6.425 GHz, 10.7-11.7 GHz, and 12.7-13.25 GHz.[2]

SUMMARY

The FWCC is pleased to see support for its petition across a broad range of wireless companies and representatives.

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[1] The FWCC is a coalition of companies, associations, and individuals interested in the fixed service – i.e., in terrestrial fixed microwave communications. Our membership includes manufacturers of microwave equipment, fixed microwave engineering firms, licensees of terrestrial fixed microwave systems and their associations, and communications service providers and their associations. The membership also includes railroads, public utilities, petroleum and pipeline entities, public safety agencies, cable TV providers, backhaul providers, and/or their respective associations, communications carriers, and telecommunications attorneys and engineers. Our members build, install, and use both licensed and unlicensed point-to-point, point-to-multipoint, and other fixed wireless systems in frequency bands from 900 MHz to 95 GHz. For more information, see www.fwcc.us.

[2] Petition for Rulemaking of the Fixed Wireless Communications Coalition in RM-11778 (filed Oct. 11, 2016) (FWCC Petition).

Four satellite interests oppose. Despite putting up a small blizzard of objections, they do not seriously dispute that FSS full-band, full-arc coordination of earth stations keeps a lot of vacant spectrum out of service, and blocks FS links that could otherwise use that spectrum. Apart from needlessly impeding FS operations, the practice violates the Commission's long-standing policies against spectrum warehousing. Indeed, the FSS is the only U.S. radio service permitted to license spectrum regardless of need.

Our opponents argue that the FWCC has never presented hard evidence of FSS blocking needed FS links. That is because no one has the particular kind of evidence that opponents demand. We do show that the very sparse FS usage of the 4 GHz band, compared with 6 GHz, makes a compelling case for blocking by earth stations. One opponent asserts, with no evidence, that the FS willingly bypasses 4 GHz because other spectrum is easier to use. In fact, 4 GHz has a unique suitability for very long links, and for that reason is not easily interchangeable with other bands. The FS would make much more use of 4 GHz if it could.

Opponents cite the FWCC and the Commission as having stated that frequency coordination usually succeeds, the implication being that the FSS full-band, full-arc policy cannot be a cause of coordination failure. The proceeding where those statements appeared, however, dealt only with the 11, 18, and 23 GHz bands. The 18 and 23 GHz bands are not at issue here, and 11 GHz is not often a cost-effective substitute for lower frequencies. Success in coordination at 11, 18, or 23 GHz does nothing to support current FSS licensing practices.

Satellite interests argue that full-band, full-arc coordination is necessary to their business, and give examples. Our proposal addresses most of their concerns. Moreover, the present policy does actual harm to FS in many of the same ways that satellite interests assert our proposal would

harm them. A grant of our proposal would have little effect on satellite services, yet would better balance the business risks of spectrum shortfall between the FS and the FSS.

In sum: full-band, full-arc coordination allows the FSS to hoard large amounts of unused spectrum that the FS needs to provide service. This is bad policy. Nothing in opponents' arguments shows otherwise.

I. INTRODUCTION

Eight entities filed in support of the FWCC Petition; all raised other issues as well.[3] Two entities filed solely on other issues.[4] Four satellite interests filed in opposition.[5]

A. Preamble

Satellite opponents raise multiple objections that we address below. None refutes these fundamental points:

1. The FSS routinely reserves large amounts of spectrum against speculative needs that often never materialize.

2. That reserved spectrum blocks vitally needed FS links.

3. An equitable rebalancing of the services' respective needs will free up spectrum for FS and serve the Commission policies against warehousing spectrum.[6]

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[3] TeleVision, Inc.; Google Fiber Inc.; Wireless Internet Service Providers Association (WISPA); Nokia; Engineers for the Integrity of Broadcast Auxiliary Services Spectrum (EIBASS); Mimosa Networks (Mimosa); Federated Wireless, Inc.

[4] Open Technology Institute and Public Knowledge; Dynamic Spectrum Alliance Limited.

[5] Satellite Industry Association (SIA): SES Americom, Inc. (SES); Intelsat License LLC (Intelsat); EchoStar Satellite Operating Corporation and Hughes Network Systems, LLC (EchoStar and Hughes).

[6] *Intelsat Licensee LLC*, 27 FCC Rcd 11234 at ¶ 15 (IB 2012) ("Commission's policy against spectrum warehousing"); *Redesignation of the 17.7-19.7 GHz Frequency Band*, 17 FCC Rcd. 24248 at ¶ 92 (2002) ("policy of preventing spectrum warehousing and promoting more efficient use of the spectrum by incumbents and new entrants alike").

The Table of Allocations makes FS and FSS co-primary in the shared bands at issue.[7] In practice, however, FSS crowds out FS by reserving large blocks of spectrum that go mostly unused for decades.

The FWCC proposal gives FSS business interests reasonable protection against unanticipated needs, while still allowing the coordination of more FS links. Satellite opponents disagree; they assert that a grant of the FWCC petition will impair their provision of service. We explain below how their concerns are largely misplaced or exaggerated.

Still, we cannot rule out occasional negative effects on satellite operations. Satellite interests see this mere possibility, no matter how slight or how minor, as sufficient grounds for denying the FWCC's request. We disagree. The present rules hinder FS offerings in the same ways that opponents fear for FSS. There is no reason why the FS should have to bear all of the risks as between the two services. The relief we request will distribute that risk more equitably, while having only slight impact (if any) on satellite earth stations.

B. Summary of the FWCC request

The Commission's present rules permit an FSS earth station to routinely coordinate over an entire frequency band, and across the entire geostationary arc, regardless of how little spectrum the earth station plans to use and how few satellites it plans to access.[8] This practice is sometimes called "full-band, full-arc" coordination.

These are the outcomes we request:[9]

1. An FSS earth station in a shared FS/FSS band can coordinate and license only the specific combinations of frequency, azimuth, and elevation angle it intends to use within one year. Any combination not listed in the

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7 47 C.F.R. § 2.106.

8 *See* 47 C.F.R. §§ 25.203(c)(2)(ii), (iv).

9 For rationale and details, see the FWCC Petition.

construction certification required to be filed one year after licensing is automatically deleted from the license and the IBFS database. A licensed and certified combination that goes unused for more than 90 days must be reported to the Commission and deleted from the license and the database.

2. An FSS applicant can coordinate any amount of additional "growth capacity" for possible future use, and can hold that growth capacity for any length of time. An FSS licensee can license any or all of its growth capacity at any time, with no further coordination. The newly licensed usage becomes subject to the above requirement on construction certification. An FS applicant can coordinate on and license FSS growth capacity only as a last resort, if no other coordination is possible, and only after attempting to consult with the FSS licensee on which specific frequencies would be least disruptive to the earth station's future plans.

3. An FSS applicant for an earth station that must be able to routinely access multiple satellites, or to add and change satellites on short notice (such as a teleport), can request a waiver permitting it to coordinate any or all frequencies, azimuths and elevation angles without construction deadlines.

4. ***This proposed provision is new***. An FSS licensee can operate on its growth capacity immediately and without prior notice in the event of a genuine emergency (such as satellite failure or natural disaster). It must apply to license the usage within 10 days, if the usage persists for that long. (We add this provision in response to concerns raised in the oppositions.)

II. A CROSS-SECTION OF FIXED MICROWAVE INTERESTS SUPPORTS THE FWCC PETITION.

Several parties express their support for the FWCC proposal:

- "Today, when spectrum is in short supply, [full-band, full-arc coordination] is a seeming inefficiency that cannot be overlooked."[10]

- "Both technology and the communications market have changed dramatically since [1967], and this fifty year-old relic is now an anomaly in the Commission's rules, is inconsistent with sound spectrum management …."[11]

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10 Google Fiber at 5.

11 WISPA at 4.

- "The U.S. should discontinue granting satellite operators the right to force valuable spectrum, which they never intend to use, to lay fallow."[12]

- "The long-standing practice of the Commission to routinely frequency coordinate terrestrial FSS satellite uplink and downlink stations for all possible frequencies in their band, and for all possible look angles, … represents an inefficient use of spectrum that constitutes a *de facto* policy of spectrum warehousing."[13]

- "The FWCC Petition identifies an important issue … Mimosa encourages the Commission to issue an NPRM to address the frequency coordination issues and proposals raised by FWCC."[14]

- "[M]oving from the existing coordination regime based on full-band, full-arc coordination to FWCC's proposed regime … will significantly increase the amount of spectrum available to FS operators for purposes of meeting the ever-growing demand for wireless broadband capacity."[15]

- "No other radio service is permitted to license spectrum regardless of need."[16]

Many of the supporting parties, plus two others, ask the Commission to make the 4 GHz band available for last-mile broadband or mobile.[17] The Mobile Now Act, S.19, if enacted in its present form, will require the Commission to report on the feasibility of allowing commercial wireless services to share the 4 GHz band.[18] Given the sparseness of detail on the parties' requests for alternative uses, we cannot yet predict the impact on fixed point-to-point services, and so

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12 Nokia at 2.

13 EIBASS at 1.

14 Mimosa at 2.

15 Federated Wireless, at 2.

16 TeleVision, Inc. at 2.

17 Google Fiber at 7-9 (low-power, short range, point-to-multipoint operation); WISPA at 4-6 (point-to-multipoint for broadband access); Nokia at 3-6 (broadband delivery); Mimosa at 4-6 (last-mile connectivity); Open Technology Institute and Public Knowledge at 8 (low-power fixed wireless and terrestrial mobile); Dynamic Spectrum Alliance Limited at 1-3 (dynamic spectrum sharing).

18 MOBILE NOW Act, S.19 § 5(b).

cannot offer affirmative support. We do favor a Commission inquiry into the practicality of offering alternative services in the band while protecting point-to-point operations.

Because such an inquiry is likely to attract a wide range of views, it promises to become a complex, multi-stage, multi-year proceeding. We ask the Commission to act on our limited coordination request now, rather than embed it among more difficult and slower-moving issues. An early grant will not impede the later consideration of last-mile broadband or mobile authority, or action under the Mobile Now Act.

III. OPPOSITION TO THE FWCC PETITION RESTS ON MISREADINGS AND EXAGGERATIONS.

A. The current FWCC request differs in important ways from our 1999 petition.

Satellite opponents uniformly insist that our current request is a repeat of one we made eighteen years ago.[19] The one similarity is that both seek change to the full-band, full-arc coordination regime. They otherwise differ in key particulars.

The 1999 request asked the Commission to limit FSS coordination of spectrum to twice actual need; to require that earth stations load to 50 percent within 30 months of licensing; and to require that an earth station that accepts a case of potential interference from an FS applicant to extend the same objective to later-coordinating FS applicants. A subsequent pleading offered a liberal construction of "actual need" to address earth stations that must access multiple and changing satellites, and other special situations.[20]

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[19] Satellite Industry Association at 1 ("similar FWCC petition"); SES at 1 ("echoes a substantially similar 1999 FWCC filing); Intelsat at 1 ("essentially a rehash"); EchoStar and Hughes at 1 ("nearly identical"), *citing* Request for Declaratory Ruling and Petition for Rule Making of the Fixed Wireless Communications Coalition in IB Docket No. 00-203, RM-9649 (filed May 5, 1999).

[20] Reply comments of the Fixed Wireless Communications Coalition, RM-9649 at 10-14 (filed July 27, 1999).

The present request seeks to limit FSS coordination to the frequencies, azimuths, and elevation angles the earth station will be using within one year of licensing; would allow the coordination of unlimited growth capacity for unlimited durations; would allow immediate use of growth capacity in emergencies, and would allow waivers for teleports and other earth stations that must routinely access multiple satellites on short notice. The proposals for growth capacity, emergency operation, and waivers are new. We make no mention of loading requirements or of accepting interference cases.

A cursory reading of the oppositions might give the impression the Commission flatly refused the 1999 request. It did not. It released a Notice of Proposed Rulemaking that proposed a remedy different from the one we had requested: if an FSS earth station in C- or Ku-band shared spectrum were to deny coordination to an FS applicant, the earth station would have to show it was using, had recently used, or had imminent plans to use the requested spectrum; otherwise the FS applicant could use it.[21] The satellite industry disfavored this proposal, as did the FWCC, although for different reasons.[22] Seeing no support in the record, the Commission terminated the proceeding without action.[23] Nonetheless, the Commission's having proposed relief indicates its agreement that relief was appropriate.

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21 *FWCC Request for Declaratory Ruling*, NPRM, 15 FCC Rcd 23127 at ¶ 53 (2000) (*Declaratory Ruling NPRM*). Earth stations licensed for 40 MHz or less of bandwidth in each direction, or licensed for less than two years, would have been exempt.

22 We feared the Commission's proposal would result in disputes over an earth station's use of frequencies at the worst possible time, when an FS applicant is attempting to finalize coordination and begin operations. *See FWCC Request for Declaratory Ruling*, 2d R&O, 17 FCC Rcd at ¶ 11 2002 (2002).

23 *Id*. at ¶ 10.

B. Opponents cannot seriously question that unused FSS capacity blocks FS links.

Satellite opponents say the FWCC has not presented evidence of particular cases where FSS earth stations impede FS deployment.[24] Those assertions are carefully worded. The opponents do not deny that full-band, full-arc coordination in fact blocks FS applications, nor could they candidly make such a denial.

1. By insisting on specific cases of FSS blocking, opponents show a misunderstanding of how frequency coordination works.

SIA quotes a 2002 Commission order as saying there was no evidence of injury to the FS from full-band, full-arc FSS coordination.[25] We explained in that earlier proceeding, and explain further below, that no one has the data SIA and the Commission are asking for.

The coordination of FS links proceeds in two steps.

First, a complex computer program takes as input multiple paths and frequencies that would suit the prospective FS network. It tests them for blockage against all incumbent FS and FSS facilities. The output reports successful paths. No one expends resources to gather data on why other paths were blocked.

Second, from among the paths that pass the first step (if any), the frequency coordinator chooses one or more and sends out prior coordination notices to incumbents that might be affected.[26]

Blockage of FS by FSS earth stations typically occurs at the first step, from which we have no data on reasons for blockage in individual cases.

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[24] Satellite Industry Association at 6; SES at 3; EchoStar and Hughes at 1-2.

[25] Satellite Industry Association at 3, *citing FWCC Request for Declaratory Ruling,* 2d R&O, 17 FCC Rcd 2002 at ¶ 12 (2002).

[26] Details of the procedure appear at 47 C.F.R. § 101.103(d).

A look at the bands in the aggregate, however, makes clear that FSS full-band, full-arc coordination does in fact block FS applications.

2. Comparison of 4 GHz and 6 GHz bands provides evidence that FSS earth stations block FS links.

The 4 GHz and 6 GHz bands are interchangeable for many FS applications, but there is a striking difference in their deployments:

4 GHz	71 links
6 GHz	20,126 links

From FCC ULS database as of May 2015, Comments of TeleVision, Inc. in RM-11778 (filed Jan. 9, 2017)

Figures 1 and 2 show the discrepancy between the bands geographically. The long-term trend appears in Figure 3. The decline in 4 GHz FS licensing results from older links going out of service combined with an inability to coordinate new links.

3.7-4.2 GHz Fixed Point-to-Point

Figure 1

5.925-6.425 GHz Fixed Point-to-Point

Figure 2

From FCC ULS database as of May 2015, Comments of TeleVision, Inc. in RM-11778 (filed Jan. 9, 2017)

The only significant performance difference between the bands is that 4 GHz is marginally better suited to very long links. That capability is what made 4 GHz the first choice for the initial

Bell System microwave network across the United States.[27] By 1960, the Bell System's 4 GHz system covered the entire country. Its map looked much like 6 GHz does today.[28]

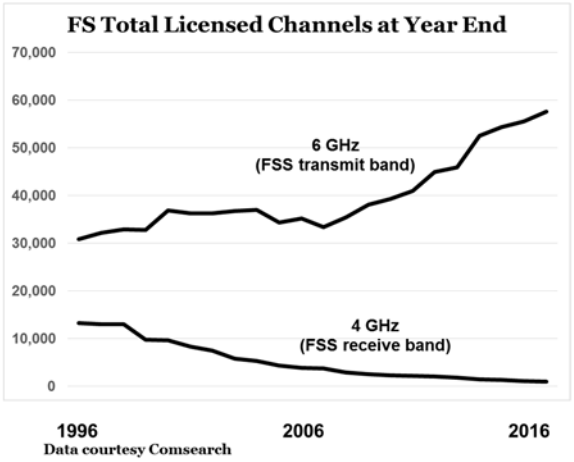
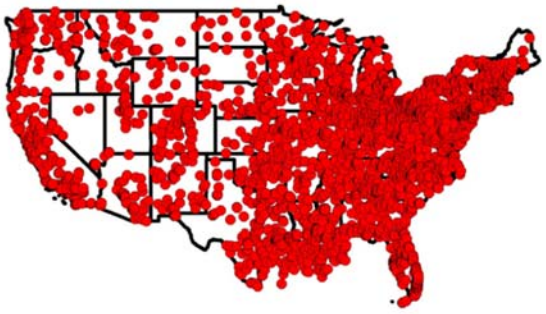


Figure 3

Except for the very longest links, there should be little discrepancy in usage between the 4 and 6 GHz bands. The striking underuse of 4 GHz FS results very largely from the widespread deployment of 4 GHz receive earth stations, shown in Figure 4.[29] That broad and dense distribution, coupled with full-band, full-arc coordination, makes the coordination of 4 GHz FS links across most of the country so expensive and difficult as to be effectively impossible. The 4 GHz band is harder for FS to coordinate than the 6 GHz band in part because the earth stations are more numerous, and in part because a 4 GHz receive earth station



FSS 3.7-4.2 GHz Earth Station Locations

Figure 4

Comments of TeleVision, Inc. in RM-11778 (filed Jan. 9, 2017)

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27 *See* A. A. Roetken, K. D. Smith and R. W. Friss, The TD-2 Microwave Radio Relay System, Bell System Technical Journal, October, at 1041-77 (Oct. 1951).

28 http://www.engineeringradio.us/blog/2011/03/bell-system-microwave-relay-system/

29 Other factors can also affect the choice of band, including equipment costs, available bandwidths, channel plan, and antenna size. The FWCC has requested changes to the available bandwidths and channel plan. Letter from Cheng-yi Liu and Mitchell Lazarus, Counsel for the FWCC, to Marlene H. Dortch, Secretary, FCC, in WT Docket No. 10-153 (filed Sept. 27, 2016).

blocks FS over a much bigger area than does a 6 GHz transmit earth station.[30] The FS incurs substantial extra costs packing links into 6 GHz because 4 GHz is unavailable.

SIA puts forward a different theory, one at odds with the facts: that the FS willingly bypasses 4 GHz because it can readily use other spectrum.[31] We wish that were true. Different frequency bands vary in their propagation characteristics. Lower frequencies are better suited to long links, and the lowest FS frequencies are uniquely suited to very long links. The propagation characteristics at 11 GHz and above make those bands ideal for shorter links, but not for the tens-of-kilometers distances that 4 and 6 GHz handle easily.[32]

Frequency (GHz)	Average FS Path Length (km)
3.7-4.2	45.4
5.925-6.425	32.3
10.7-11.7	16.3
10.7-11.7 (note 1)	9.2

(note 1: path length in the high-rainfall southeastern U.S.)
from FCC ULS database

30 The pattern of a 6 GHz earth station transmitter creates two trapezoidal FS exclusion areas approximately parallel to the satellite transmission path. By zig-zagging the FS network and crossing the trapezoids approximately perpendicular to the satellite transmission path, coordinators can usually work around the earth station. A 4 GHz receive earth station, however, has an elliptically-shaped exclusion zone much larger than the 6 GHz zone, with a geometry that is much more difficult to avoid. For a graphic depiction, see TeleVision, Inc. at 3.

31 Satellite Industry Association at 10.

32 "Rain fade" attenuation, due to moisture in the atmosphere, increases dramatically with operating frequency, and above 10 GHz limits reliable links to short distances. Practical designs often require paths too long to be reliably engineered above 10 GHz. (Paths at 4 and 6 GHz are typically designed for 99.999% availability or better.) For examples of path limitations due to rain fade, *see* G. Kizer, *Digital Microwave Communication* at 442-43 (figures 11.38, 11.39) (Wiley 2013).

Most applications that work best at 4 or 6 GHz have no practical, cost-effective alternatives in other bands. The FS needs access to spectrum at 4 and 6 GHz, along with other bands, to meet customers' needs.

C. Claims that frequency coordination usually succeeds omit critical context.

Opponents quote the FWCC and the Commission as having said that FS frequency coordination succeeds in most cases, hereby implying that earth stations rarely block coordination.[33] SIA states that coordination is successful even if FS applicants "prefer to expedite deployment by avoiding C-band" as long as the FS applicant finds a link.[34]

This argument omits a key detail: the FWCC and the Commission were both responding to a congressional inquiry that asked only about the 11, 18, and 23 GHz bands, specifically, whether coordination or auctioning of common carrier licenses makes the best use of this spectrum.[35] Nothing in the FWCC comments or the Commission's report addresses 4 and 6 GHz. The 18 and 23 GHz FS bands have no satellite operations, and thus have no bearing on the FWCC petition. The 11 GHz band, although part of our request, is limited to international operations,[36] and so has fewer earth stations than it might otherwise.

Frequency coordination in these bands succeeds in part because the bands can often substitute for one another. Occasionally 11 GHz can also substitute for 6 GHz, although the shorter range at 11 GHz may require relaying communications through intermediate towers,

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33 Satellite Industry Association at 4-5, 7-8, citing FWCC comments in Docket 12-156 (filed July 16, 2012), *Deployment of 11 GHz, 18 GHz, and 23 GHz Microwave Bands*, Report to Congress, 27 FCC Rcd 14482 at ¶¶ 25, 29-30 (WTB 2012) (*11, 18, 23 GHz Report*) ; SES at 2, *citing 11, 18, 23 GHz Report* at ¶¶ 25-27.

34 Satellite Industry Association at 12. We respond to this claim in Part III.B.2, just above.

35 *11, 18, 23 GHz Report* at ¶ 2.

36 47 C.F.R. § 2.106 footnote NG52.

which greatly increases cost. Otherwise none of the bands subject to the inquiry can replace 4 or 6 GHz. The quoted statements do not apply to 4 and 6 GHz, which have no satellite-free alternatives. FS operators cannot, as SIA suggests, "expedite deployment by avoiding C-band" because, except in rare cases, there is no substitute for C-band.

D. The FWCC proposal is consistent with the satellite industry's reasonable business needs.

Satellite opponents claim that full-band, full-arc coordination is needed to fulfill their business objectives.

- SIA: Full-band, full-arc coordination promotes competition by allowing customers to switch providers, allows emergency response and restoration, helps to resolve interference, facilitates coordination among satellite operators, and supports "occasional use" operations.[37]

- SES: Full-band, full-arc coordination is needed to respond to customer requirements, maintain service through an outage, correct interference, facilitate coordination among satellites, and manage interference between adjacent satellites.[38]

- Intelsat: Full-band, full-arc coordination is needed to enable customers to easily change satellite providers, promote short-term, occasional use services, such as coverage of sporting events, manage interference events, and manage natural disasters and national security situations.[39]

A 2000 Commission statement agrees with some of these points:

> Our full-band licensing policy promotes important operational objectives in the FSS, in particular by providing earth station licensees the needed flexibility to change transponders or satellites on short notice …. Many satellite earth stations employ multiple antennas and regularly communicate with a constantly changing mix of FSS satellites, both domestic and foreign. This type of operation requires access over a wide range of orbital arc and frequencies. … [O]ur full-band licensing policy provides all earth station operators the ability to conform to the constraints placed on the satellite operators and the flexibility to change channels to

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37 Satellite Industry Association at 13-15.

38 SES at 3-5.

39 Intelsat at 3-5.

> access available transponder capacity within a satellite network and available capacity on other satellite networks.[40]

The FWCC proposal addresses most instances of each of these needs. The waiver procedure will accommodate earth stations that regularly communicate with a changing mix of satellites. The availability of growth capacity will allow operators to respond to unexpected customer demands, provide occasional use services, coordinate changing operations among satellites, and more. In case of an emergency, such as satellite failure or transponder outage, immediate access to growth capacity with no paperwork delays will enable prompt restoration of service. [41]

Occasional cases may still arise in which the lack of full-band, full-arc coordination impedes FSS. This possibility is not a ground to deny the FWCC request. The FS likewise favors competition and allowing its customers to switch providers, needs emergency response and restoration, has demand for occasional use operations, must respond to equipment outages, and so on. We are hindered in meeting all of these demands by earth stations' having coordinated spectrum they may never need. We are willing to accommodate the FSS industry's reasonable business needs, and ask that they accommodate ours as well.

E. Minor objections

We briefly address several minor objections to our proposal.

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40 *Declaratory Ruling NPRM* at ¶ 40.

41 SES gives an example of a satellite failure that required moving one of its own satellites to a different point in the orbital arc. SES at 4-5.

1. Remote earth station siting

Opponents claim the FWCC proposal would remove any incentive for siting earth stations in remote areas, where they are less likely to interfere with FS operations.[42] Under our proposal, however, earth station operators would still derive a clear benefit from remote siting. Out-of-the-way locations are less likely to have FS operators seeking to coordinate FSS growth capacity, and so in practice should effectively offer full-band, full-arc access for the life of the earth station.

2. Permitted List authority

Opponents claim the FWCC proposal is inconsistent with earth stations' "permitted list" authority, under which a suitably authorized earth station can communicate with all U.S.-licensed spacecraft and all foreign-licensed satellites granted market access by the Commission.[43] The FWCC proposal does nothing to limit that authority. Earth stations can still communicate with any spacecraft for which they have authorization. We ask only that they limit coordination to the satellites and transponders with which they actually communicate.

3. Conditions for full-band, full-arc waiver

The FWCC proposed a waiver mechanism allowing full-band, full-arc coordination for an earth station that is "operated as part of an overall network with a need to access multiple satellites, including possible satellites not yet identified at the time of coordination and licensing."[44] SIA objects that this formulation describes every earth station because "[a[ll earth stations operate as part of an 'overall network,' and no earth station licensee can be assured that it will be able to rely on a single satellite over the long term."[45]

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42 Satellite Industry Association at 18-20; SES at 4.

43 Satellite Industry Association at 21-22; Intelsat at 3.

44 FWCC Petition at 9 (filed Oct. 11, 2016).

45 Satellite Industry Association at 16.

We reiterate that the waiver option is intended for the "subset of earth stations, such as teleports, that must be able to access multiple satellites and to add and change satellites on short notice."[46] We suggested this provision in order to aid earth stations that must communicate with several satellites as part of their day-to-day business. It is not meant for earth stations that may occasionally have to switch satellites during the facility's lifetime. If borderline cases arise, we leave them to the discretion of the Commission's waiver process.

4. Transportable earth stations

Intelsat objects that temporary fixed (transportable) earth station operators often do not know needed location and operational details until a few days before an event, and so would have to file license modifications or applications or requests for special temporary authority on short notice.[47]

Temporary fixed earth stations, unlike fixed earth stations, must coordinate the particular frequencies they intend to use.[48] Nevertheless, we think temporary fixed licensees would be good candidates for full-band, full-arc waivers, subject to the existing requirement that they coordinate individually with potentially affected FS facilities.[49]

5. Intra-service vs. *inter-service sharing*

SIA asserts that the Part 101 rules limiting FS to specific frequencies and azimuths are designed to facilitate *intra*-service sharing among FS operators, while *inter*-service sharing between FSS and FS networks is similar for both services.[50]

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46 FWCC Petition at 2.

47 Intelsat at 4.

48 47 C.F.R. § 25.277(c)(3).

49 47 C.F.R. § 25.277(d).

50 Satellite Industry Association at 17-18.

We agree on the limited point that earth stations do not need intra-service sharing rules. Unlike FS facilities, earth stations transmit and receive in different bands, and so cannot cause interference to one another.

We strongly disagree with SIA's view that FS/FSS inter-service sharing is substantially the same for both services.[51] The option of full-band, full-arc coordination for FSS, but not for FS, makes sharing very different for the two services. We seek limits on an earth station's permissible coordination precisely to bring greater similarity to the inter-service sharing rules.

6. "Express preference" for the FS

SIA asserts the Commission gave FS an "express preference" in the 10.7-11.7 and 12.75-13.25 GHz bands when it limited FSS to international operations.[52] SIA adds: "any asymmetries in the FS and FSS rules applicable to these band segments favor the fixed service."[53]

The limitation to international use does restrict the numbers of earth stations in the band, and thus makes it easier for the FS to coordinate. But the much more important asymmetry is the ability of earth stations, but not FS facilities, to tie up far more spectrum than they use.

7. Administrative burden and cost

SIA asserts that grant of the requested relief will add costs to earth stations and burden Commission staff, in part because the FWCC "seems to contemplate" retroactive application.[54]

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51 SIA cites as support for this proposition the *Declaratory Ruling NPRM* at ¶¶ 17-18. That passage says only that FS and FSS must each coordinate with the other service. The very next paragraph (¶ 19) begins, "The two services differ, however, in their approach to licensing," and goes on to outline some of the differences that underlie the FWCC petition.

52 Satellite Industry Association at 6-8, *citing* 47 C.F.R. § 2.106 footnote NG52.

53 Satellite Industry Association at 7.

54 Satellite Industry Association at 22-23.

The FWCC did not request retroactive application of the rule change we seek, for just the reason that SIA objects to it. We would nonetheless welcome the Commission's making the change retroactive on its own motion.

Even without retroactivity, we agree that a limited number of earth stations may have to make more filings than formerly—*i.e.*, those earth stations that do not qualify for a full-band, full-arc waiver but, over the license term, must sometimes change frequencies or satellites. The Commission will have to process their applications, but will be compensated by the earth stations' application filing fees. Those fees in turn may constitute a small burden to earth stations, just as they do to FS facilities that must add or change frequencies or azimuths on an existing license. This is not a ground for denying the FWCC request.

8. Claims that the FWCC request is repetitive

Finally, some opponents seek dismissal of the FWCC request because the request is "repetitive,"[55] citing this rule:

> Petitions which are moot, premature, repetitive, frivolous, or which plainly do not warrant consideration by the Commission may be denied or dismissed without prejudice to the petitioner.[56]

The FWCC's two petitions on full-band, full-arc coordination come 18 years apart. We explained their dissimilarities in Part III.A above.

Most dismissals under Sec. 1.401(e) are for mootness, not repetitiveness.[57] Findings of repetitiveness are rare. They occur only when the second request mirrors the first and follows it

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55 Satellite Industry Association at 23-24; SES at 6; EchoStar and Hughes at 2.

56 47 C.F.R. § 1.401(e).

57 *E.g.*, *Mr. David Cavossa* (Executive Director, Satellite Industry Association), 19 FCC Rcd 24979 (2004) (dismissing as moot petition for rulemaking seeking radar detector emissions limits in bands where radar detectors do not emit).

closely in time.[58] We are not aware of a filing held to be repetitive after a time span of eighteen years.

In short, there is no precedent for dismissal of the FWCC petition under Section 1.401(e), or otherwise.

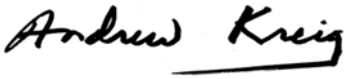
CONCLUSION

The record shows substantial support for the FWCC Petition.

Opponents do not seriously question the differences between FS and FSS coordination procedures, or the fact that FSS licensees' holding unused spectrum can block FS applications. Their objections either reflect a wish to maintain an FSS advantage in supposedly co-primary spectrum, or exaggerate minor drawbacks to the FSS. None of the objections, alone or in combination, constitutes grounds for denial.

The Commission should promptly issue a Notice of Proposed Rulemaking that tracks the FWCC Petition.

Respectfully submitted,



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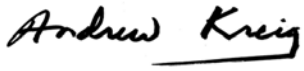
January 24, 2017

[58] *E.g. James Edwin Whedbee*, 28 FCC Rcd 379 (OET 2013) (dismissing request for declaratory ruling following comments by 15 days); *Glen E. Zook*, 27 FCC Rcd. 5317 (WTB 2012) (dismissing rulemaking petition 22 months after dismissal of identical petition).

CERTIFICATE OF SERVICE

I, Andrew Kreig, Co-Chair of the Fixed Wireless Communications Coalition, hereby state that I caused true copies of the foregoing REPLY COMMENTS to be sent by first class mail, postage prepaid, this 24th day of January, 2017, to the attached service list.



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