

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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

REPLY OF THE SATELLITE INDUSTRY ASSOCIATION

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SUMMARY

The record does not support any change in the Commission’s policy of licensing fixed-satellite service (“FSS”) earth stations for the full frequency band and the visible orbital arc. Neither the Fixed Wireless Communications Coalition (“FWCC”) nor any commenter provides evidence that fixed service (“FS”) interests are being harmed by the policy. Instead, the facts show that FS has robust access to spectrum shared with FSS operations and that the flexibility inherent in full-band, full-arc licensing is essential to ensure that satellite networks can be managed efficiently to provide critical customer services.

Contrary to FS industry claims, the regulatory framework applicable to conventional C-band and extended Ku-band spectrum is more than fair to FS applicants. Indeed, FS has an explicit preference in the extended Ku-band due to limitations on the FSS operations entitled to protection in the spectrum. In the conventional C-band, FS also had the advantage of a huge head start, as earth station applicants had to work around nationwide microwave networks licensed and built before FSS was granted shared access to the frequencies. Only when legacy microwave links were decommissioned – a development wholly unrelated to FSS operations – were earth station operators able to deploy facilities more broadly.

Thus, FS enjoyed superior access to the conventional C-band for many years and retains superior access to the extended Ku-band today. The FWCC’s suggestion that the existing rules are biased in favor of FSS is completely unsupported by the facts.

As the Commission has emphasized, licensing of earth stations for the full band and full arc is necessary to ensure that high-cost, high-risk satellite networks can satisfy customer requirements and earn a return on their investment. Satellites achieve tremendous spectrum efficiency, with full reuse of the bands at every orbital position. Satellite customers must be able

to quickly and seamlessly switch transponders or satellites in order to take advantage of the capabilities of satellite networks, as this flexibility allows rapid response to shifting demand, restoration of service in the event of an outage, resolution of interference, and robust competition among providers.

No party presents a viable alternative to the current FS-FSS sharing framework. The FWCC proposal would unnecessarily hamstring satellite operators, drastically curtailing their ability to meet their commitments to customers. FSS networks simply cannot operate efficiently if customers must go through a licensing procedure each time they must change their antenna pointing or frequency use. In contrast, the current rules fully accommodate the legitimate needs of the FS community. An FS applicant planning a new link has multiple options to achieve coordination with FSS incumbents, including adjusting the path's end points, taking advantage of terrain blockage, and employing shielding. Applicants unwilling to go through these steps can select FS spectrum in which coordination with earth station operators is not required.

The information before the Commission reinforces the wisdom of its determination that full-band, full-arc licensing of earth stations promotes important public interest objectives. The Commission should reaffirm that finding and dismiss the FWCC's petition.

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The Satellite Industry Association (“SIA”)¹ submits this reply to the comments of other parties regarding the above-captioned petition for rulemaking filed by the Fixed Wireless Communications Coalition, Inc. (“FWCC”).²

As SIA explained in its petition to dismiss or deny the FWCC Petition,³ the Commission has fully considered the FWCC’s complaints about full-band, full-arc licensing of fixed-satellite

¹ About the Satellite Industry Association: SIA is a U.S.-based trade association providing representation of the leading satellite operators, service providers, manufacturers, launch services providers, and ground equipment suppliers. For more than two decades, SIA has advocated on behalf of the U.S. satellite industry on policy, regulatory, and legislative issues affecting the satellite business. For more information, visit www.sia.org. SIA Executive Members include: The Boeing Company; DIRECTV; EchoStar Corporation; Intelsat S.A.; Iridium Communications Inc.; Kratos Defense & Security Solutions; Ligado Networks; Lockheed Martin Corporation; Northrop Grumman Corporation; OneWeb; SES Americom, Inc.; Space Exploration Technologies Corp.; SSL; and ViaSat, Inc. SIA Associate Members include: ABS US Corp.; Artel, LLC; DigitalGlobe Inc.; DRS Technologies, Inc.; Eutelsat America Corp.; Global Eagle Entertainment; Glowlink Communications Technology, Inc.; Hughes; Inmarsat, Inc.; Kymeta Corporation; L-3 Electron Technologies, Inc.; O3b Limited; Panasonic Avionics Corporation; Planet; Semper Fortis Solutions; TeleCommunication Systems, Inc.; Telesat Canada; TrustComm, Inc.; Ultrasat, Inc.; and XTAR, LLC.

² Petition for Rulemaking, Fixed Wireless Communications Coalition, Inc., RM-11778, filed Oct. 11, 2016 (“FWCC Petition”).

³ See Petition to Dismiss or Deny of the Satellite Industry Association, RM-11778, filed Jan. 9, 2017 (“SIA Opposition”).

service (“FSS”) earth stations.⁴ The Commission declined to make any changes in its rules due to the “absence of evidence” that its policy harmed terrestrial fixed service (“FS”) interests,⁵ and because no alternative had been presented that would fairly accommodate FSS’ networks need for flexibility in accessing shared spectrum.⁶ Neither the current FWCC Petition nor any of the related comments supplies new information or proposals to warrant re-examination of the issues. Accordingly, the Commission should promptly dismiss the FWCC Petition.

I. THE RECORD DOES NOT JUSTIFY CHANGES IN FULL-BAND, FULL-ARC EARTH STATION LICENSING

The evidence before the Commission directly contradicts any claims that FS interests are disadvantaged in their ability to use spectrum shared with FSS operations. The facts show that FS makes robust use of the extended Ku-band spectrum identified in the FWCC Petition under Commission policies that strongly tilt the balance of coordination in favor of FS operations.⁷ Furthermore, by the standards espoused by the FWCC itself and endorsed by the Commission, coordination in the conventional C-band is a clear success story.⁸

Nothing in the comments here supports a different conclusion. Instead, the pleadings reveal that the Commission’s coordination framework has allowed both FS and FSS networks the opportunity to flourish and use shared spectrum efficiently.

⁴ See *FWCC Request for Declaratory Ruling on Partial-Band Licensing of Earth Stations in the Fixed-Satellite Service That Share Terrestrial Spectrum*, Second Report and Order, 17 FCC Rcd 2002 (2002) (the “Termination Order”).

⁵ *Id.* at 2007, ¶ 12.

⁶ *Id.* at 2007, ¶ 11.

⁷ SIA Opposition at 6-9.

⁸ *Id.* at 9-12.

A. The Commission’s Coordination Rules Treat FS Applicants Fairly

No party presents any evidence to bolster the FWCC Petition’s unsupported claims that the current rules for coordination between FSS and FS operators put FS networks at a disadvantage. There is not a single example in which an FS applicant tried and failed to reach a coordination agreement with FSS earth station licensees.

As the Commission has previously emphasized, the requirements for inter-service coordination between FSS and FS networks are substantially the same for both services, mandating that applicants choose facility sites and frequencies that will minimize the possibility of harmful interference.⁹ In fact, the only bias affecting coordination in the bands addressed in the FWCC Petition significantly benefits FS applicants. FSS use of the 10.7-11.7 GHz and 12.75-13.25 GHz extended Ku-band frequencies is subject to an international-only restriction that was adopted for the explicit purpose of preserving access to the band for FS operations.¹⁰

The data before the Commission confirm that FS networks are actively using all the frequencies listed in the FWCC Petition. Commission databases reveal that tens of thousands of FS licenses are active in the extended Ku-band.¹¹ The FWCC itself has explained that in bands including the 10.7-11.7 GHz extended Ku-band spectrum, existing frequency coordination procedures have enabled “highly dense, efficient use of the spectrum by a wide variety of

⁹ See *id.* at 17 and nn.44 & 45, citing *FWCC Request for Declaratory Ruling on Partial-Band Licensing of Earth Stations in the Fixed-Satellite Service*, Notice of Proposed Rulemaking, 15 FCC Rcd 23127 (2000) (“FWCC NPRM”) at 23134, ¶¶ 17-18; 47 C.F.R. Section 25.203(a); and 47 C.F.R. Section 101.101(d)(1).

¹⁰ See SIA Opposition at 8 and nn.23-24 (discussing footnote NG52 to the U.S. Table of Allocations).

¹¹ See *id.* at 7

users.”¹² In a 2012 report to Congress the Commission concurred, concluding that few if any requests for frequencies go unaddressed based on an inability to coordinate, and stating that there was no reason to believe that this rejection rate would materially increase in the near future.¹³

The SIA Opposition also highlights evidence of growth in the number of FS licenses in the 5925-6425 MHz portion of the conventional C-band used for FSS uplinks.¹⁴ George Kizer of TeleVision, Inc. indicates that 20,126 FS microwave paths currently operate in this spectrum.¹⁵ In short, the record shows that there are significant numbers of FS links using the 10.7-11.7 GHz, 12.7-13.25 GHz, and 5925-6425 MHz spectrum segments included in the FWCC Petition.

While there are relatively few FS licenses in the 3700-4200 MHz band portion of the conventional C-band used for FSS downlinks,¹⁶ a review of the history relating to this segment makes clear that these numbers are not the result of any unfairness in the coordination framework. Because FS and FSS have co-primary status in the C-band, priority in the coordination process is time-based, with the earlier applicant being entitled to protection from interference caused by later filers. As SIA has previously pointed out, FS operations had access to conventional C-band spectrum well before commercial satellite service was even established,

¹² Comments of the Fixed Wireless Communications Coalition, WT Docket No. 12-156, filed July 16, 2012 (“FWCC Microwave Report Comments”) at 2.

¹³ See *Deployment of 11 GHz, 18 GHz, and 23 GHz Microwave Bands – Report Pursuant to Section 6412 of the Middle Class Tax Relief and Job Creation Act of 2012*, Report to Congress, 27 FCC Rcd 14482 (WTB 2012) (“WTB Microwave Report”) at 14491-92, ¶¶ 29-30.

¹⁴ SIA Opposition at 9 and n.26 (discussing Comsearch data showing a 14% growth rate in FS channels in this band from 2005 to 2009).

¹⁵ Letter of George Kizer, President, TeleVision, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, RM-11778, filed Jan. 8, 2017 (“Kizer Letter”) at 5.

¹⁶ See *id.* (71 microwave links currently operate in the 3700-4200 MHz band).

and the Commission expressed concern regarding whether satellite networks could be accommodated in those bands given the density of FS deployment.¹⁷

The Kizer Letter confirms that prior to the advent of satellite services, “microwave networks extended over most of the United States” and heavily used the 3700-4200 MHz band.¹⁸ In order to deploy facilities without interfering with these pre-existing licensees, Mr. Kizer notes that FSS operators “had to place their earth stations at locations that isolated them from the extensive incumbent microwave systems.”¹⁹ For example, Mr. Kizer states, siting earth stations “at remote locations and the use of earth berms, terrain depressions and metal fences to provide [radiofrequency] shielding were common practice.”²⁰

During this period, the FS community expressed no complaints about the coordination framework for FS-FSS sharing. That is not surprising, as the rules overwhelmingly worked in favor of FS by protecting the pre-existing installed base of terrestrial facilities. Earth station applicants bore the burden of working around the incumbent FS links by carefully choosing sites away from dense FS deployments and investing in shielding and other measures to achieve coordination.

As Mr. Kizer observes, the current situation is “quite different”:

¹⁷ See Comments of the Satellite Industry Association, the Satellite Broadcasting and Communications Association, the World Teleport Association, and the Aerospace Industries Association of America in IB Dkt No. 00-203, *et al.*, filed Jan. 8, 2001 at 18-19 & n.21, *citing Establishment of Domestic Communication-Satellite Facilities by Non-governmental Entities*, 18 RR2d 1631, 1634 (1970) (noting that terrestrial use has “substantially saturated the 4 and 6 GHz bands near several population centers throughout the United States and quite generally in the North-eastern states”).

¹⁸ Kizer Letter at 2.

¹⁹ *Id.*

²⁰ *Id.*

The nationwide microwave networks are gone. Satellite operators have proliferated. Satellite earth stations are routinely deployed in urban areas and often on top of buildings.²¹

This shift in use of the 3700-4200 MHz band, however, has nothing to do with the coordination rules for sharing between FS and FSS networks, as those rules have remained unchanged. Any suggestion that earth station operators somehow drove out FS providers is clearly wrong – FSS networks in the 3700-4200 MHz frequencies were and are required to accept any interference from previously established FS networks.

Instead, the shift occurred because the FS networks that had been so broadly deployed were abandoned for reasons unrelated to FSS operations. As legacy FS facilities were decommissioned, satellite systems were able to respond to pent-up customer demand and build earth stations in areas previously unavailable to them. Consistent with express Commission policies, these earth stations were coordinated and licensed for the “entire frequency band and visible arc . . . in order to protect [the Commission’s] flexibility and that of the satellite operator to change satellite locations and transponder use assignments to best satisfy overall domestic satellite service requirements.”²²

As a result of these steps by satellite networks to make active use of 3700-4200 MHz frequencies in areas where FS facilities had been taken out of service, the FS industry finds itself in a position similar to that which faced FSS operators when they were first permitted access to the band. Specifically, in order to coordinate and deploy new links, FS applicants must plan around the installed base of FSS earth stations. Fortunately, FS operators have numerous options to ensure compatibility, including all of the measures used historically by FSS interests: careful

²¹ *Id.*

²² *American Satellite Corporation*, 72 F.C.C.2d 750 at 754, ¶ 10 (1978).

selection of transmitter sites, taking advantage of terrain features that block signal propagation, and installing shielding.

SIA understands that these measures can have associated costs and result in delays that FS applicants might prefer to avoid by choosing alternative spectrum where coordination with FSS is not required. As SIA noted in its filing, satellite earth station operators often face the same difficult choices.²³

However, the fact that a microwave applicant might choose to pursue other available spectrum rather than go through the effort of coordinating a new link in the 3700-4200 MHz band does not imply that the coordination framework is inequitable or ineffective. To the contrary, the FWCC has argued – and the Commission has agreed – that coordination procedures qualify as successful as long as a microwave applicant is able to establish a link to satisfy its requirements, even if the applicant must make changes to its original design in the process.²⁴ By that standard, the existing Commission approach to sharing between FS and FSS networks is clearly successful given that FS links use every band segment identified in the FWCC Petition and the absence of evidence that any FS applicant has tried and failed to coordinate a new link.²⁵

In short, the history of FS-FSS sharing in the conventional C-band presented by FS interests themselves demonstrates that the sharing framework was and is more than fair to FS

²³ SIA Opposition at 10.

²⁴ *See id.* at 10-12, *citing* FWCC Microwave Report Comments at 10-11 and WTB Microwave Report, 27 FCC Rcd at 14489, ¶ 21.

²⁵ In his letter, Mr. Kizer states that he has forty years of experience in assisting with implementation of microwave services, and he indicates that he is convinced that full-band, full-arc earth station licensing is the primary obstacle to FS deployment in the 3700-4200 MHz band. Kizer Letter at 5. To state the obvious, however, Mr. Kizer’s “conviction” is not evidence, and tellingly he provides not a single concrete example from his years of experience to back up his assertion.

operators. Satellite providers and their customers faced significant constraints when first granted access to this spectrum due to the need to protect the widely deployed incumbent FS networks. As those FS networks were decommissioned and previously unavailable locations became feasible for earth stations, the FSS industry moved in to fill the gap, making investments in new facilities and ensuring continued robust use of the spectrum. Having enjoyed the benefits of first in time priority for decades, the FS industry now wants to change the rules in ways that would drastically narrow the scope of existing and future earth station licenses, ignoring FSS operators' reliance interests and devaluing their sunk investments. Because there is not a shred of evidence to support these changes, the Commission must reject them.

B. FSS Networks Robustly and Efficiently Use Spectrum Shared with FS Systems

As discussed above, none of the parties that filed in support of the FWCC Petition has provided any documentation of harm to FS interests resulting from the current coordination rules in spectrum shared with FSS operations. However, several make unwarranted claims that C-band spectrum in particular is underutilized or that satellite networks are hoarding unused spectrum.²⁶ These assertions could not be farther from the truth.

The most glaring flaw in the terrestrial interests' argument about spectrum efficiency is that they consider the issue only from the perspective of usage by individual satellite terminals, rather than looking at the efficiency of satellite networks as a whole. This narrow view is

²⁶ See, e.g., Letter of Kalpak Gude, President, Dynamic Spectrum Alliance, to Marlene H. Dortch, Secretary, Federal Communications Commission, RM-11778, filed Jan. 10, 2017 ("DSA Comments") at 2; Engineers for the Integrity of Broadcast Auxiliary Services Spectrum Comments, RM-11778, filed Jan. 9, 2017 ("EIBASS Comments") at 1; Nokia Comments, RM-11778, filed Jan. 9, 2017 ("Nokia Comments") at 1-2; Comments of Open Technology Institute at New America and Public Knowledge, RM-11778, filed Jan. 9, 2017 ("OTI and PK Comments") at 3; Wireless Internet Service Providers Association Comments, RM-11778, filed Jan. 9, 2017 ("WISPA Comments") at 3.

equivalent to judging whether terrestrial mobile networks are efficient based on how much an individual smartphone is in use. Such an analysis would be blatantly misleading because it ignores the fact that mobile networks allow for significant spectrum re-use, allowing the network to allocate channels as needed among individual terminals.

Similarly, satellite networks achieve tremendous spectrum efficiency because space stations deployed at two-degree intervals across the geostationary arc reuse each spectrum band. In the conventional C-band, for example, there are roughly fifty satellites on the Commission's Permitted Space Station List that have some coverage of the United States.²⁷ Furthermore, the Commission already imposes substantial requirements on satellite networks to optimize spectrum efficiency, including requiring space stations to employ state of the art full frequency reuse.²⁸ But even without those rules the simple economics of satellite network operation would ensure efficiency – given the huge sunk investment that is required to build, launch and operate a satellite, satellite operators need to maximize traffic loading in order to gain a return on their investments.

The Commission has long recognized that full-band, full-arc earth station licensing is critical for satellite networks to achieve efficient use of the spectrum. The policy reflects an affirmative determination that earth station access to a broad frequency range and the ability to repoint antennas across the visible satellite arc was needed to give the Commission and satellite operators the necessary flexibility to change satellite orbital locations and transponder assignments to best meet overall satellite service needs. The Commission expressly advised

²⁷ See Approved Space Station List, available at <https://www.fcc.gov/approved-space-station-list>.

²⁸ See 47 C.F.R. Section 25.210(f).

satellite operators that it would not permit “restrictions on earth station frequency use resulting from limited terrestrial coordination to restrict the operational flexibility of domestic satellites.”²⁹

The record in this proceeding is full of examples of why this flexibility is critical to efficient spectrum utilization. EchoStar observes that the Commission’s policy allows “earth stations to change orientations and frequencies to transmit and receive from various transponders and satellites in response to changes in commercial and operational requirements.”³⁰ As Intelsat points out, this flexibility can be critically important in the event of a natural disaster or other emergency, when immediate restoration of telecommunications services may be necessary to avoid loss of life and prevent serious disruptions to critical infrastructure.³¹ The SES filing recounts a concrete example when preserving service continuity after another operator’s satellite suffered a malfunction required that SES’s customers repoint their antennas to both track a moving spacecraft and temporarily switch to a bridge satellite.³² Intelsat notes that “satellite operators routinely address potential or actual interference concerns by moving customers to other available frequency band segments or satellites.”³³ PSSI explains that its business of providing transmission and reception services for thousands of live news, entertainment, and sporting events every year would be “all but impossible” if it was deprived of the ability to make

²⁹ *American Satellite Corporation*, 72 FCC2d 750, 754 (1978).

³⁰ Comments of EchoStar Satellite Operating Corp. and Hughes Network Systems, LLC, RM-11778, filed Jan. 9, 2017, at 2.

³¹ Opposition of Intelsat License LLC, RM-11778, filed Jan. 9, 2017 (“Intelsat Opposition”) at 5.

³² Petition to Dismiss or Deny of SES Americom, Inc., RM-11778, filed Jan. 9, 2017 (“SES Opposition”) at 4-5.

³³ Intelsat Opposition at 5; *see also* SES Opposition at 5.

use of whatever capacity is available for a given time slot.³⁴ Moreover, as the SIA Opposition emphasizes, the flexibility inherent in current Commission policies ensures economic efficiency by allowing users to change satellite service providers in response to price and quality, rather than being locked in to one satellite operator.³⁵

Focusing on just one of the benefits of full-band, full-arc licensing – restoring service in the event of a transponder or satellite outage – makes clear that the policy is necessary for satellite networks to operate efficiently. Even the FWCC has recognized that preserving service continuity in the event of a facility malfunction is an important public interest objective.³⁶ But under the approach suggested in the FWCC Petition, an earth station operator’s license would be limited to frequencies and pointing configurations actually in use. Although the FWCC contemplates allowing an earth station licensee to coordinate the full band and full arc as “growth capacity,”³⁷ the earth station operator would lack authority to quickly change its spectrum use or pointing when needed. Furthermore, FS applicants could seek access to the FSS “growth capacity,” whittling away the options available to an earth station operator in the event of an outage.³⁸

The FWCC contemplates that FS parties would be required to “attempt to consult” with the earth station operator in an effort to select channels that are least likely to disrupt the earth

³⁴ Opposition of PSSI Global Services, LLC, RM-11778, filed Jan. 12, 2017, at 2; *see also* Intelsat Opposition at 4; Opposition of Pacific Satellite Connection, Inc., RM-11778, filed Jan. 19, 2017.

³⁵ SIA Opposition at 14.

³⁶ *See* Termination Order, 17 FCC Rcd at 2006, ¶ 11 (noting that the FWCC objected to the Commission’s proposals in part because they did not accommodate the need to access additional frequencies in the event of a satellite or transponder outage).

³⁷ FWCC Petition at 8.

³⁸ *Id.*

station licensee's future plans,³⁹ but that consultation would be of minimal value. No satellite service user can accurately predict in advance what frequencies and pointing direction it will need in the future in order to have its service restored – there are too many variables. In the event of a facility failure, a satellite operator typically uses a complicated priority system, reclaiming spectrum from users who did not purchase protection in order to restore service to protected customers. How it works in any given situation will depend on a broad range of factors, including whether a whole satellite failed or just one or more transponders; whether the operator has another space station available that can be moved into place; whether any replacement capacity has similar technical characteristics to the failed facility; and which and how many customers are entitled to protection or may be preempted.

Under the FWCC Petition's approach, the complexity of restoring service would be increased exponentially. Specifically, a customer would be able to take advantage of replacement capacity only if it had been able to protect access to a frequency channel and pointing direction that happened to match the characteristics of the capacity made available by the satellite operator. Of course, the odds that an earth station licensee would be able to predict months or years in advance the precise frequencies and orbital location it would need to use in the event of an outage affecting its primary capacity are infinitesimal. Moreover, even if the earth station operator happened to guess right, under the FWCC proposal, it would not be authorized to use the capacity immediately but would instead have to first seek Commission authority. The delay entailed with seeking such authority would result in longer service outages for FSS customers – a result that clearly would contravene the public interest.

³⁹ *Id.* at 9.

In short, the FWCC’s proposal would handcuff satellite operators and prevent them from managing their networks in order to provide service continuity for customers. Using the terrestrial mobile analogy again, the FWCC’s approach equates to a scenario in which an individual smartphone was authorized to use a small subset of channels and to communicate with only one or two cell towers. A mobile network provider could not possibly make effective use of its licensed spectrum and satisfy the shifting service needs of its customers with such constraints.

The Commission cannot put satellite operators or their customers in this untenable position. Instead, it must confirm the prior finding that full-band, full-arc licensing is essential to ensure that both the Commission itself and satellite operators have the flexibility needed to adjust to changing demand, prevent interference, and meet customer requirements. Contrary to the claims of some commenters, an earth station operator that seeks full-band, full-arc licensing is not attempting to warehouse spectrum that it does not intend to use⁴⁰ but is instead complying with an explicit Commission directive designed to ensure that satellite users can take full advantage of the large coverage areas and multi-billion dollar investment in satellite systems. In fact, Google Fiber expressly recognizes that there is nothing improper in an earth station applicant seeking a license for the full available spectrum and a range of possible pointing configurations – the company admits that it has coordinated and licensed its own earth stations consistent with the full-band, full-arc policy.⁴¹

The Commission’s earth station licensing policy is a necessary element of – not an impediment to – efficient use of spectrum shared between FSS and FS operations. Eliminating

⁴⁰ See EIBASS Comments at 1; Kizer Letter at 6; Nokia Comments at 6; OTI and PK Comments at 4.

⁴¹ Comments of Google Fiber Inc., RM-11778, filed Jan. 9, 2017 (“Google Fiber Comments”) at 5 n.13.

the policy as requested by the FWCC would profoundly disrupt the functioning of satellite networks and deprive satellite customers of their contractual rights to service restoration.

II. THE EXISTING FS-FSS COORDINATION FRAMEWORK BETTER SERVES THE PUBLIC INTEREST THAN ANY PROPOSED ALTERNATIVE

The SIA Opposition explains that even leaving aside the lack of a factual basis for the relief sought by the FWCC, the petition must be rejected for failure to propose a workable substitute for full-band, full-arc earth station licensing.⁴² In particular, like the 1999 FWCC petition, the current version fails to “fully and properly take into account the fact that the FSS and FS services have significantly different requirements for access to the electromagnetic spectrum in order to meet their business needs,” and does not present an effective solution that would address the needs of FSS and FS operations.⁴³

The SIA Opposition highlights several significant flaws in the FWCC proposal. Under the FWCC’s suggested approach, an FSS earth station would be stripped of the authority to change frequencies or pointing to respond to customer requirements or to restore service in the event of an outage without regard to whether there was any FS demand for use of spectrum.⁴⁴ Moreover, adoption of the FWCC proposal would nullify the pro-competitive, pro-consumer objectives embodied in the Commission’s grant of “Permitted List” authority.⁴⁵ Implementation of the FWCC changes would also exponentially increase the burdens borne by Commission staff and impose new administrative costs on earth station licensees because a license modification

⁴² SIA Opposition at 18-23.

⁴³ See Termination Order, 17 FCC Rcd at 2007, ¶ 11.

⁴⁴ SIA Opposition at 18-21.

⁴⁵ *Id.* at 21-22; see also Intelsat Opposition at 2-4.

would need to be filed and processed each time an earth station needed to switch transponders or satellites – often on an expedited basis.⁴⁶

A number of parties that support the FWCC Petition also recognize the need to protect incumbent FSS operations and allow earth stations continued flexibility, but none provides any concrete proposals that would achieve these objectives. For example, EIBASS specifically recognizes that:

while terrestrial FS stations can have their frequency and other parameters changed without too much difficulty, changes or repairs to orbiting satellites in [geostationary] orbit are not possible. If a transponder fails, either another transponder frequency on the same satellite must be used, or, in the rare event of a loss of an entire satellite, a different satellite, at a different location in [geostationary] orbit, must be used. Further, such changes need to be available in real time.⁴⁷

Yet having acknowledged the legitimate needs of earth station operators to immediately switch transponders or satellites to maintain continuity in the event of a malfunction, EIBASS goes on to admit that under the framework suggested by the FWCC, an arrangement for specific replacement capacity “may not be in place.”⁴⁸ This is a vast understatement of the problem. As discussed above, satellite networks use complex prioritization systems to restore service in the event of an outage, and the measures needed in each case will vary based on multiple factors. Absent a crystal ball, the likelihood that an earth station operator will manage to protect its ability to access the exact frequencies and pointing direction that it will need to restore service following a failure affecting its primary transponder or satellite is practically zero. And even if the frequencies and pointing configuration needed were available to the earth station operator, it

⁴⁶ SIA Opposition at 22-23.

⁴⁷ EIBASS Comments at 4.

⁴⁸ *Id.*

would be required to first go to the Commission and obtain immediate special temporary authority (“STA”) to make the switch and a license modification for longer term operations.

Thus, the FWCC approach clearly would not allow an earth station operator to make the “real time” changes EIBASS concedes would be needed to restore service in the event of an outage. The EIBASS statement that it nevertheless “believes that the FWCC proposal is a reasonable balancing of FS and FSS needs”⁴⁹ is an illogical *non sequitur*.

Other comments reflect a similar disconnect. Mimosa Networks acknowledges that “FSS uses [the 3700-4200 MHz] band for satellite receive operations, and that such operations must be protected from harmful interference.”⁵⁰ Nokia emphasizes that any regulatory changes affecting the 3700-4200 MHz band must be designed to ensure that incumbent FSS operations “can be protected and also expand.”⁵¹ OTI and PK also expressly acknowledge the need to “ensure that FSS incumbents are protected from harmful interference.”⁵² But none of these parties makes any concrete proposals for how to achieve these objectives.

In fact, there is no consensus among the terrestrial interests regarding whether the changes sought by the FWCC Petition are a good idea. The Dynamic Spectrum Alliance states that it is not taking a position on the specifics of the FWCC proposal.⁵³ OTI and PK emphasize that they do not support the rule changes proposed by FWCC and ask the Commission to

⁴⁹ *Id.*

⁵⁰ Comments of Mimosa Networks, RM-11778, filed Jan. 9, 2017, at 4-5.

⁵¹ Nokia Comments at 5.

⁵² OTI and PK Comments at 2-3.

⁵³ DSA Comments at 2.

consider unspecified “alternative approaches that could facilitate more efficient and intensive use of these bands while protecting incumbent operations from harmful interference.”⁵⁴

A few parties ask whether the regulatory framework being developed for the Citizens Broadband Service (“CBRS”) in 3550-3700 MHz should be considered as a possibility for application to the 3700-4200 MHz band,⁵⁵ but these entities ignore the substantial difference in earth station deployment between the two band segments. As SIA has explained, Commission-imposed limitations have resulted in a relatively small number of U.S. earth stations that use 3600-3700 MHz frequencies, in contrast to the thousands of ubiquitously-deployed earth stations that operate in the conventional C-band spectrum.⁵⁶

The assertion in the OTI and PK Comments that the CBRS approach designed to protect Department of Defense and Navy radar on battle cruisers using extended C-band frequencies should work to protect conventional C-band FSS stations⁵⁷ reflects another fundamental misconception. Specifically, the measures adopted by the Commission to protect federal radar systems rely on a combination of exclusion zones and the development of an Environmental Sensing Capability that can detect when a nearby radar system is in operation.⁵⁸ No comparable “sensing” capability can be used to protect FSS receive earth stations, as there is no way of detecting whether a nearby earth station antenna is receiving a signal from a space station at any given time in a particular area.

⁵⁴ OTI and PK Comments at 1.

⁵⁵ *See id.* at 10; Google Fiber Comments at 4; WISPA Comments at 2-3.

⁵⁶ *See* Comments of the Satellite Industry Association, GN Docket No. 12-354, filed Feb. 20, 2013 at 4-7; Reply Comments of the Satellite Industry Association, GN Docket No. 12-354, filed Apr. 5, 2013 at 4-6.

⁵⁷ OTI and PK Comments at 1.

⁵⁸ *See* 47 C.F.R. Section 96.15.

Thus, as in 2002, the record before the Commission now does not present an “effective solution” that would maintain the flexibility critical to the service-specific needs of the satellite industry.⁵⁹ But as in 2002, there is also no evidence to suggest that the current coordination framework applicable to sharing between FS and FSS networks is in need of alteration. Instead, the representations of the FWCC and other terrestrial interests demonstrate that FS applicants seeking to deploy new links in spectrum shared with satellite services have a range of options at their disposal.

As discussed above, the Kizer Letter mentions the methods that earth station operators used to introduce facilities in the conventional C-band spectrum at a time when significant incumbent microwave deployments had already taken place nationwide – choosing remote locations, taking advantage of earth berms or terrain depressions, and use of fencing or other shielding⁶⁰ – and these are all available to FS applicants as well. The FWCC has pointed to other mechanisms that can be relied on to enable sharing, including moving one or both ends of a proposed microwave path, changing the number of hops, and altering antenna heights or size.⁶¹

The FWCC has also endorsed perhaps the most straightforward approach an FS applicant can take to pursue coordination: “negotiation of interference rights” with other parties.⁶² The Commission has recognized that historically, FSS and FS interests have been able to resolve their differences over coordination and reach mutually satisfactory agreements to accommodate specific proposed facilities.⁶³ SIA has emphasized that its members are committed to good faith

⁵⁹ See Termination Order, 17 FCC Rcd at 2007, ¶ 11.

⁶⁰ Kizer Letter at 2.

⁶¹ FWCC Microwave Report Comments at 11.

⁶² *Id.*

⁶³ FWCC NPRM, 15 FCC Rcd at 23137, ¶ 24.

participation in the coordination process.⁶⁴ Because coordination allows the affected parties to tailor a solution that addresses the individual circumstances relevant to the case at hand, it is far superior to the kind of one-size-fits-all regulation proposed by the FWCC and other parties.⁶⁵

Again, if FS applicants are unwilling to invest the time and effort in pursuing a coordination agreement and would prefer to simply select alternative spectrum that is not shared with FSS, that is their prerogative. However, the Commission cannot conclude that the coordination process is broken if the reality is that FS applicants choose not to employ it because they are able to accommodate their operations in other frequency bands. The FWCC and its supporters have provided neither a reason for the Commission to depart from its existing framework for FS-FSS sharing nor a viable alternative.

III. OTHER RULE CHANGES PROPOSED IN THE COMMENTS ARE UNSUPPORTED AND UNRELATED TO FS-FSS SHARING

A number of parties use the opportunity of the FWCC Petition to suggest additional burdensome changes to satellite regulation that have no evidentiary basis and no real nexus to the issues raised by the FWCC Petition. For example, EIBASS sets forth a laundry list of proposals, including a suggestion that the Commission eliminate analog transmissions, make it harder to obtain an earth station STA, and drastically shorten earth station license terms.⁶⁶ EIBASS does

⁶⁴ SIA Opposition at 9.

⁶⁵ For example, EIBASS proposes a complicated secondary licensing approach in which the relative rights of FSS and FS providers would vary depending on the reason why an earth station operator needed to change its frequencies or pointing. EIBASS Comments at 6-7. But EIBASS fails to explain why such convoluted regulation would be preferable to allowing the entities affected by a coordination discussion to determine how best to meet their spectrum needs.

⁶⁶ EIBASS Comments at 4-5.

not provide any facts to support these changes, and the Commission should summarily reject them.⁶⁷

EIBASS also argues that the Commission should consider FS-FSS sharing procedures applicable to the 6875-7125 MHz broadcast auxiliary service (“BAS”) frequencies in addition to the frequency bands listed in the FWCC Petition.⁶⁸ However, EIBASS does not mention the fact that the Commission explicitly rejected EIBASS’s arguments about full-band, full-arc earth station licensing in this BAS spectrum as recently as 2010.⁶⁹

Suggestions that the Commission should undertake an audit of earth station records are also beyond the scope of the instant proceeding. EIBASS attaches a document that purports to show errors in the Commission’s records for earth stations in the 2 GHz, 6 GHz, 7 GHz, and 27-40 GHz bands,⁷⁰ and Google Fiber provides a map that it says indicates earth station sites where

⁶⁷ The Commission considered whether to prohibit analog video transmissions in 2008 and rejected the idea based on evidence that the transition to digital services was well under way and that arbitrarily forcing entities to accelerate that transition would be “unreasonably expensive and burdensome.” *See 2000 Biennial Regulatory Review – Streamlining and Other Revisions of Part 25 of the Commission’s Rules Governing the Licensing of, and Spectrum Usage by, Satellite Network Earth Stations and Space Stations*, Eighth Report and Order and Order on Reconsideration, 23 FCC Rcd 15099 (2008) at 15115, ¶¶ 31-32. EIBASS presents absolutely no rationale for making it more difficult to obtain an earth station STA, nor does EIBASS explain why the Commission should revisit its 2003 decision to extend earth station license terms to fifteen years, which was unanimously supported by commenters. *See Amendment of the Commission’s Space Station Licensing Rules and Policies*, Notice of Proposed Rulemaking and First Report and Order, 17 FCC Rcd 3847 (2002) at 3895, ¶ 141.

⁶⁸ EIBASS Comments at 7 n.9.

⁶⁹ *See Amendment of Parts 25, 74, 78 and 101 of the Rules regarding Coordination between the Non-Geostationary and Geostationary Satellite Orbit Fixed-Satellite Service and Fixed, Broadcast Auxiliary and Cable Television Relay Services in the 7 GHz, 10 GHz and 13 GHz Frequency Bands*, Report and Order, 25 FCC Rcd 622 (2010) at 627, ¶ 15 (proposals to limit the frequencies and look angles that earth stations can coordinate “have been fully considered and addressed in prior proceedings” and Commission sees “no reason to revisit them here”).

⁷⁰ EIBASS Comments at 7 & Figure 1.

it was unable to identify a visible dish.⁷¹ Neither EIBASS nor Google Fiber, however, explains the methodology used to identify earth station licensing errors or demonstrates the extent to which such errors have impeded FS use of spectrum. Moreover, a number of earth stations on the EIBASS list are licensed to operate wholly outside of the conventional C-band and extended Ku-band frequencies that are the subject of the FWCC Petition. Thus, such earth station operations have no bearing on the merits of the FWCC Petition.

Other suggested Commission actions are simply redundant of rules that are already on the books. For example, both EIBASS and Nokia mention the need to certify timely completion of earth station construction,⁷² which is mandated by Section 25.133.⁷³ Similarly, the Commission already has authority to cancel any earth station license for which regulatory fees have not been paid.⁷⁴ To the extent that these commenters have legitimate requests for changes in earth station licensing rules, they can present their concerns in the Commission's proceeding on the review of its Part 25 framework.

⁷¹ Google Fiber Comments at 9-10.

⁷² EIBASS Comments at 5; Nokia Comments at 2.

⁷³ 47 C.F.R. Section 25.133.

⁷⁴ See EIBASS Comments at 5. This authority is set forth in 47 C.F.R. Section 1.1164.

IV. CONCLUSION

For the foregoing reasons and those set forth in the oppositions of SIA and other satellite service providers and customers, SIA urges the Commission to promptly dismiss or deny the FWCC Petition.

Respectfully submitted,

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January 24, 2017

CERTIFICATE OF SERVICE

I hereby certify that on this 24th day of January, 2017, I caused a true copy of the foregoing "Reply of the Satellite Industry Association" to be sent by first class mail, postage prepaid, upon the following:

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