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

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of )  
 )  
Amendment of Section 2.106 )  
of the Commission's Rules to )  
Allocate Spectrum at 2 GHz for Use )  
by the Mobile-Satellite Service )

ET Docket No. 95-18  
RM-7927

To: The Commission

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REPLY COMMENTS

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## SUMMARY

In the captioned Notice of Proposed Rule Making ("NPRM"),<sup>1</sup> the Commission proposes reallocating the 1990-2025 MHz (Earth-to-space) and the 2165-2200 MHz (space-to-Earth) frequency bands to the mobile-satellite service ("MSS") for both geostationary and non-geostationary satellites. Unfortunately, this reallocation cannot be made without disrupting other vital services. To implement this reallocation, the Commission complicates matters by proposing the relocation of Broadcast Auxiliary Service ("BAS") users off the 1990-2110 MHz band and by proposing the relocation of terrestrial fixed point-to-point microwave service ("FS") users off the paired 2110-2145 MHz and 2165-2200 MHz bands.

Under the assumption that BAS and MSS users could not share the 1990-2025 MHz band, the Commission proposes relocating BAS users from the 1990-2110 MHz portion of that band to the 2110-2145 MHz band. Similarly, on the heels of being subjected to one forced relocation off the 2 GHz band to clear spectrum for PCS, FS users would be forced to move from the 2110-2145 MHz band, because the Commission assumes that they could not share that band with newly relocated BAS users, and from the paired 2165-2200 MHz band, because the Commission assumes that they could not share that band with MSS users.

In making this proposal, the Commission ignores the acute spectrum shortage facing FS users. It cavalierly proposes that FS users in the 2110-2145 MHz and the 2165-2200 MHz bands join the already overcrowded bands above 3 GHz, which were reallocated for the 2 GHz FS users relocated in ET Docket No. 92-9 to clear spectrum for PCS.

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<sup>1</sup>10 FCC Rcd 3230 (1995).

This overcrowding could become worse if the Commission's recommendations to reallocate the 6, 11 and 18 GHz bands, so that FS users would "share" these bands with non-geostationary ("NGSO") MSS feeder links on a co-primary basis, are adopted at WRC-95.<sup>2</sup> Up to a 30% decrease in available spectrum in the upper 6 GHz and 11 GHz bands, and severe path degradation, could plague FS users if they are made co-primary with NGSO MSS feeder links. Indeed, despite widespread industry opposition, the Commission attempts to justify its recommendation that FS users share these bands with NGSO MSS feeder links, by promising that it will "give priority in the 6 and 11 GHz bands to relocated 2 GHz microwave licensees during a reasonable period of time."<sup>3</sup> This commitment is nothing more than a "Pyrrhic victory." Once NGSO MSS feeder links invade the 6 and 11 GHz bands and preempt a significant amount of the already dwindling spectrum for FS users, this priority treatment will be meaningless because there will be inadequate capacity available for accommodating their relocation.

As an alternative to the proposed reallocation of the 1990-2025 MHz and 2165-2200 MHz bands for MSS, the Commission seeks comment on the merits of reallocating only 40 MHz from the 1990-2010 MHz and 2180-2200 MHz bands. This proposed alternative is made because it could be less disruptive to other users and because it would be consistent with existing and proposed international allocations.

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<sup>2</sup>See Preparation for International Telecommunication Union World Radiocommunication Conferences, Report, IC Docket No. 94-31 (FCC 95-256, released June 15, 1995) at paras. 46-54 ("WRC-95 Report").

<sup>3</sup>WRC-95 Report at para. 53.

The Commission's proposed "extended" allocation of 70 MHz in the 1990-2025 and 2165-2200 MHz bands is not supported in the record. Although several parties acknowledge that some additional spectrum should be allocated for MSS, the Commission's game of spectrum dominoes is rejected by MSS, BAS and FS interests alike.

This opposition is based upon several factors. Highly questionable assumptions are made by the Commission regarding how much spectrum for MSS in the 2 GHz band actually would be needed to supplement the 1.6/2.4 GHz MSS allocation and how much spectrum would have to be surrendered by FS users to accommodate MSS and BAS users. Inadequate spectrum is available above 3 GHz for relocated FS users. Significant unresolved issues exist regarding how re-located FS and BAS licensees would be compensated. Reallocation of the 2 GHz band for MSS would not have to be made on an urgent basis because it will be several years before international launch of this service.

As the industry representative for FS equipment manufacturers, the Fixed Point-to-Point Communications Section, Network Equipment Division of the Telecommunications Industry Association ("TIA"), shares these concerns. Spectrum available for FS users is being eroded substantially by Commission actions in other proceedings. The reallocations for MSS, proposed by the Commission in the NPRM, would make matters much worse.

Moving FS users en masse from the 1990-2025 and 2165-2200 MHz bands, so that MSS users could use the 2 GHz band, is not necessary. Before such drastic action is taken, further, comprehensive industry study must be made to determine that the public interest indeed would be served by the proposed MSS reallocation and by the corresponding FS and BAS relocations.

TIA recommends that the Commission defer any reallocation of the 2 GHz band for MSS. Instead, TIA urges that the Commission request appropriate industry groups to assist it in implementing the following script in allocating the 2 GHz band:

- The actual amount of spectrum in the 2 GHz band needed for MSS in the U.S. must be determined and documented. Further serious consideration must be given to the Commission's proposal to reallocate only 40 MHz, instead of 70 MHz, for 2 GHz MSS.
- The actual amount of spectrum that would be available for displaced 2 GHz FS users in the bands above 3 GHz must be determined.
- Instead of assuming that BAS users still need 35 MHz to maintain their current level of operation, the availability of alternative bands and the ability of new digital compression and other techniques to reduce the amount of spectrum these users actually would need must be evaluated.
- With appropriate technical restrictions, it is possible that certain FS paths can operate on a co-primary basis in the 2165-2200 MHz band with MSS users. An industry group, such as TIA's TR14.11, which developed the FS/PCS sharing criteria, could work with MSS interests: (i) to establish appropriate criteria for determining whether FS paths could share the 2165-2200 MHz band with MSS users; and (ii) to establish appropriate channel plans and other technical restrictions on MSS users to protect FS users in the same band if such sharing were to occur.

A clear message emerges from the comments. Serious questions exist regarding the MSS reallocation and the corollary relocations of FS and BAS users. Time must be taken to answer all these questions completely.

Unfortunately, the Commission is ignoring these warnings. In its recent WRC-95 Report, the Commission continues advocating reallocation of 70 MHz in the 1990-2025 MHz and 2165-2200 MHz bands for MSS and it persists in pushing for a January 1996 entry date

by U.S. MSS licensees.<sup>4</sup> Continued pursuit of these objectives would be totally contrary to the record and thus would be arbitrary and capricious.

Serious concern in the record over the proposed 2 GHz band MSS allocation must be addressed. TIA's foregoing prudent, patient approach is responsive to these concerns. If it is adopted, a more realistic, less disruptive approach to reallocating the 2 GHz band could be taken without compromising the needs of the MSS, BAS or FS users.

If any relocation of FS users, however, is to be made, they must be protected. TIA joins several other parties in this proceeding in strongly recommending that such relocation be phased in to protect FS users and that FS users be compensated appropriately.

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<sup>4</sup>WRC-95 Report at paras. 43-45.

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Allocate Spectrum at 2 GHz for Use ) RM-7927  
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To: The Commission

REPLY COMMENTS

Pursuant to Section 1.415 of the Commission's Rules,<sup>1</sup> the Fixed Point-to-Point Communications Section, Network Equipment Division of the Telecommunications Industry Association ("TIA"),<sup>2</sup> hereby replies to certain comments on the above-captioned Notice of Proposed Rule Making ("NPRM").<sup>3</sup>

In the NPRM, the Commission proposes reallocating additional spectrum from the 2 GHz band for the mobile-satellite service ("MSS"). Specifically, the Commission proposes:

- Reallocating the 1990-2025 MHz (Earth-to-space) and 2165-2200 MHz (space-to-Earth) bands for MSS. These bands would be allocated for

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<sup>1</sup>47 C.F.R. Section 1.415 (1989). The date for filing reply comments has been extended to June 21, 1995. Order Partially Granting Extension of Time, (DA 95-1190, released June 1, 1995).

<sup>2</sup>TIA is the principal industry association representing fixed point-to-point microwave radio manufacturers. TIA members serve, among others, companies, including telephone carriers, utilities, railroads, state and local governments, and cellular carriers, licensed by the Commission to use private and common carrier bands for provision of important and essential telecommunications services.

<sup>3</sup>10 FCC Rcd 3230. All parties filing comments on the NPRM and the abbreviations used herein for each party are listed on Attachment A hereto.

both geostationary ("GSO") and for non-geostationary (low-Earth orbit or "LEO") satellites.

- Relocating the Broadcast Auxiliary Service ("BAS") licensees from the 1990-2110 MHz portion of the 1990-2025 MHz band to the 2110-2145 MHz band. This relocation would clear the 1990-2025 MHz band for MSS, because the Commission assumes that MSS and BAS users could not share the same band.
- Relocating common carrier and private terrestrial fixed point-to-point microwave service ("FS") users: (i) from the 2110-2145 MHz band to clear spectrum for the BAS licensees migrated off the 1990-2110 MHz band, because it assumes that BAS and FS users could not share this band; and (ii) from the 2165-2200 MHz band to clear spectrum for MSS users, because it assumes that MSS and FS users could not share this band. The FS users would be compensated for their move under the same terms as they are to be compensated for the ongoing move off the 2 GHz band to accommodate PCS.<sup>4</sup>

#### **THE COMMISSION'S PROPOSED REALLOCATION FOR 2 GHz MSS REQUIRES A MAJOR RELOCATION OF FS AND BAS USERS**

When the Commission established PCS, it allocated the 1850-1990 MHz band for such broadband services.<sup>5</sup> This allocation overlaps MSS allocations made in the 1992 World Administrative Radio Conference ("WARC-92"):<sup>6</sup>

We anticipate that PCS will use spectrum intensively, thereby bringing into question the feasibility of MSS. Therefore, it does not appear to be practicable to make a domestic allocation of 2 GHz spectrum for

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<sup>4</sup>NPRM at paras. 1, 9, and 11.

<sup>5</sup>Redevelopment of Spectrum to Encourage Innovation In the Use of New Telecommunications Technologies, Second Report and Order, ET Docket No. 92-9, 8 FCC Rcd 6495, 6519-20 (1993), modified, Memorandum Opinion and Order, 9 FCC Rcd 1943 (1994) ("New Telecommunications Technologies").

<sup>6</sup>In WARC-92, the 1970-1980 MHz (Earth-to space) and 2100-2170 MHz (space-to-Earth) bands in Region 2, and the 1980-2010 MHz (Earth-to-space) and 2170-2200 MHz (space-to-Earth) bands worldwide, were allocated to MSS. NPRM at para. 2.

MSS that is consistent with the international allocation without jeopardizing the availability of spectrum for PCS.<sup>7</sup>

Under these circumstances, the Commission proposes a drastic rearrangement of the 2 GHz band to provide spectrum for MSS and to make its domestic allocation "as consistent as possible with the WARC-92 worldwide MSS allocation."<sup>8</sup> However, to implement this allocation, the Commission must move BAS licensees from the 1990-2025 MHz band to the 2110-2145 MHz band:

We have studied the feasibility of sharing between MSS and BAS at 1990-2025 MHz and have concluded that such sharing is not feasible because of the potential for interference between the two services. Therefore, if we ultimately decide to adopt the proposal advanced herein, it will be necessary to relocate BAS incumbents that use this spectrum. To accommodate these incumbents, we propose to add 35 megahertz of spectrum to the upper end of the BAS band at 2110-2145 MHz, thus providing the BAS service with the same amount of spectrum it currently has.

\* \* \* \* \*

We believe that relocating BAS incumbents at 1990-2025 MHz to 2110-2145 MHz would involve minimal engineering changes to BAS systems because of the proximity of this band to the existing BAS allocation . . . . We propose to require MSS providers to bear the costs associated with relocating the existing BAS operations to the 2110-2145 MHz band.<sup>9</sup>

And, since every action has a reaction, to make room for the BAS licensees in the 2110-2145 MHz band and to make room for MSS users in the paired 2165-2200 MHz band, the FS users would be moved from these bands to the same, already congested bands above 3 GHz designated for the PCS clearance:

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<sup>7</sup>NPRM at para. 2.

<sup>8</sup>NPRM at para. 8.

<sup>9</sup>NPRM at paras. 9-10.

The 2110-2130 MHz portion of the band, however, is currently used by common carrier fixed microwave services, and the 2130-2145 MHz portion is currently used by private fixed microwave services. If sharing between BAS and fixed microwave services in the 2110-2145 MHz band is not workable, which we believe to be the case due to the mobile nature of [electronic news gathering] operations, BAS could use this band only if the fixed microwave services were relocated to another band by MSS providers.

\* \* \* \* \*

We have already provided for reaccommodation of 2 GHz fixed microwave incumbents. Specifically, in our emerging technologies proceeding, we made five higher bands available for use by private and common carrier incumbents now operating at 1850-1990 MHz, 2110-2150 MHz and 2160-2200 MHz.<sup>10</sup>

In an effort to complement the domestic reallocation proposals made in the NPRM, the Commission, in a related proceeding, is recommending that WRC-95 adopt the identical MSS allocation on a worldwide basis.<sup>11</sup> The Commission, in the same decision, also recommends that WRC-95 reallocate the upper 6, 11 and 18 GHz bands for non-geostationary ("NGSO") MSS feeder links.<sup>12</sup>

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<sup>10</sup>NPRM at paras. 10-11 (footnotes omitted).

<sup>11</sup>Preparation for International Telecommunication Union World Radiocommunication Conferences, Report, IC Docket No. 94-31 (FCC 95-256, released June 15, 1995) at paras. 43-45 ("WRC-95 Report").

<sup>12</sup>WRC-95 Report at paras. 46-54.

## **THE RECORD DOES NOT SUPPORT THE PROPOSED REALLOCATION**

The record of this proceeding does not support the Commission's 2 GHz MSS reallocation proposal. Several parties oppose the reallocation as premature because WRC-95 is still pending and because international inauguration of MSS in the 2 GHz band is still several years away.<sup>13</sup> Other parties disagree with the Commission's suggestion that MSS licensees bear the burden of compensating relocated FS and BAS users.<sup>14</sup> With the 1.6/2.4 GHz band allocation for MSS, various commenters question the need for the amount of spectrum proposed to be reallocated in the 2 GHz band.<sup>15</sup>

In particular, FS user groups are concerned that, once again, they will be "sacrificial lambs" for the satellite industry.<sup>16</sup> Nevertheless, if the Commission is able to demonstrate that the proposed spectrum shuffle is in the public interest, these user groups require that appropriate specific conditions be imposed on the new MSS licensees regarding negotiating with FS users and compensating them for the relocation.

## **THE PROPOSED RELOCATION OF FS USERS IS UNJUSTIFIED AND IS NOT IN THE PUBLIC INTEREST**

TIA supports the FS users and agrees that the reallocation, as proposed, is not in the public interest. Instead of taking an extreme approach and moving FS users from the paired 2110-2145 MHz and 2165-2200 MHz bands to accommodate MSS (and BAS) users, the Commission should take a step back and work with industry groups to determine: (i) how

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<sup>13</sup>See, e.g., API at 10-11; TRW at 12; Constellation at 2-3; Ericsson at 3; GE Americom at 3; Loral at 12-16.

<sup>14</sup>See, e.g., PCSAT at 6-11; TRW at 3, 8-13.

<sup>15</sup>See, e.g., API at 4-5; Celsat at 11.

<sup>16</sup>API at 5-9; UTC at 1; AAR at 3-5; APCO at 2.

much additional spectrum for MSS actually is needed in the 2 GHz band; (ii) how much spectrum BAS users actually will need once digital technologies are in place and what alternative bands might be available; (iii) how much spectrum would be available in the bands above 3 GHz to accommodate displaced 2 GHz FS users; and (iv) how difficult it actually will be for MSS and FS users to share in the 2165-2200 MHz band on a path-by-path basis.

The record supports TIA's recommendation that any action to reallocate the 2 GHz band for MSS and to relocate FS or BAS users only be undertaken after deliberate review and after related international decisions are made. As one MSS proponent, Loral states, "the Commission [must] defer action on the bands to be allocated" until after international allocation issues are finalized.<sup>17</sup> Similarly, TRW, another MSS representative, concludes that the:

Commission may be able to avoid burdening any service with the cost of relocating the BAS and FS simply by adopting a more measured and deliberate approach . . . . Such an approach would be in keeping with a more realistic timetable for completion of the instant proceeding, and for the construction and launch of U.S. MSS systems.<sup>18</sup>

Furthermore, COMSAT and API express great concern over the Commission's proposal because, its claims to the contrary, there are no international MSS allocations for large portions of the spectrum targeted in this rule making.<sup>19</sup>

Specifically, numerous issues still must be resolved before any 2 GHz MSS allocation could be adopted:

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<sup>17</sup>Loral at 3.

<sup>18</sup>TRW at 11.

<sup>19</sup>COMSAT at 2-3; API at 10.

- It is unclear if MSS users would need 70 MHz reallocated in the 2 GHz band to meet the potential, but still undocumented, demand for their service. Only 40 MHz in the 2 GHz band has been allocated worldwide for MSS.
- To the extent that BAS users would be required to relocate from the 1990-2110 MHz band, there is evidence on the record that technical improvements would minimize the amount of spectrum needed for their services. Moreover, it is possible that BAS users could move to a higher band, in lieu of the 2110-2145 MHz band, so that those advanced, spectrally efficient technologies could be exploited.
- Most importantly, the Commission's assumptions regarding the need to relocate FS users from the 2110-2145 MHz and 2165-2200 MHz bands are flawed. The Commission fails to consider the fact that inadequate spectrum above 3 GHz is available for the relocated FS users and that sharing between MSS and FS users in the 2165-2200 MHz band might, under certain limited circumstances, be possible.

An open, thorough industry review of these issues is needed. Representatives of all affected industry segments, including MSS, BAS, and FS users and equipment manufacturers, as well as Commission, NTIA and State Department representatives, could participate. Once this industry review is completed, then the Commission will be in a much better position to propose any necessary reallocations for MSS without unduly disrupting FS and BAS operations. Thus, the Commission must defer action on the 2 GHz MSS reallocation it proposes in the NPRM, and it must withdraw, or defer, its recommendations to the U.S. delegation for WRC-95 that this reallocation be adopted on a worldwide basis.

**A. It is Uncertain if 70 MHz is Needed in the 2 GHz Band for MSS.**

In the NPRM, the Commission suggests that sufficient need exists to support an allocation of 70 MHz in the 2 GHz band for MSS.<sup>20</sup> Furthermore, the Commission

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<sup>20</sup>NPRM at para. 7.

supports its proposed allocation of 70 MHz by claiming that it would ensure that U.S. and international MSS operations are consistent.<sup>21</sup>

These proposals are not made without serious reservation, however. The Commission still "seek[s] comment on whether 70 [MHz] of spectrum is the appropriate amount to allocate to 2 GHz MSS."<sup>22</sup> It also puts forward an alternative to the 70 MHz MSS reallocation, by proposing allocation of only 40 MHz at the 1990-2010 MHz and 2180-2280 MHz bands. These bands were allocated for MSS worldwide at WARC-92 and remain available for paired use even after the PCS allocation.<sup>23</sup>

TIA is supportive of making MSS, PCS and other emerging wireless technologies readily and widely available. Nonetheless, the Commission fails to document that, regardless of international allocations, the full 70 MHz proposed to be reallocated in the 2 GHz band for MSS is needed.<sup>24</sup>

API agrees:

In its First Report and Order and Further Notice of Proposed Rule Making in Docket No. 90-56, released June 11, 1993, the Commission allocated 33 MHz of spectrum for MSS in the 1530-1544 MHz and 1626.5-1645.5 MHz bands and proposed to allocate an additional 5 MHz at 1525-1530 MHz for MSS. To date, no further action has been taken by the Commission -- no applications have been accepted, no licenses have been granted, and no additional guidance has been issued. Despite this pending proceeding to place MSS at 1.6 GHz, the Commission has now proposed to designate additional

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<sup>21</sup>NPRM at para. 8.

<sup>22</sup>NPRM at para. 15.

<sup>23</sup>NPRM at para. 15. This proposal also would be consistent with Canada's contemplated imminent release of a new Standard Radio System Plan to channelize the 2010-2110 MHz and 2200-2300 MHz bands for medium capacity, digital FS applications. This channelization plan already has been approved by Canadian industry representatives.

<sup>24</sup>See SBMS at 1.

spectrum for MSS by displacing the essential communications facilities of POFS, Common Carrier, and Broadcast Auxiliary Services (BAS) located in the 2.1 GHz range.

\* \* \* \* \*

API respectfully submits that finalizing the 1.6 GHz allocation for MSS should take precedence over the 2.1 GHz allocation, particularly since the 1.6 GHz allocation is much less disruptive for incumbents. Unlike the 2.1 GHz proceeding, the 1.6 GHz allocation would not displace any existing facilities. Instead, it would allow co-sharing between MSS and Marine Mobile Satellite Systems.

\* \* \* \* \*

The Commission has proposed to move ahead with a 2.1 GHz reallocation before it has been conclusively established that additional spectrum is needed beyond the 1.6 GHz allocation. API believes that the 1.6 GHz allocation would fully meet the needs of MSS providers.<sup>25</sup>

Not only are FS users skeptical about the Commission's "rush" to reallocate the 2 GHz band, but MSS interests also caution against any precipitous action. TRW wants the Commission to wait and resolve "key issues," such as how much spectrum is needed for MSS and how much spectrum allocated to FS and BAS users must be cleared, before finalizing any proposed domestic allocation:

TRW notes that the United States has reserved the right to permit MSS operations in the 2 GHz bands in 1996 -- nine years before the rest of the world. In spite of the Commission's good intentions, however, it appears unlikely that the complex matters discussed herein can be resolved quickly enough to take advantage of the acceleration in implementation dates that the United States carved out for itself. Rather, if the history of other satellite services offers any indication, several years will elapse as the Commission grapples with the issues in the instant rulemaking proceeding, participates in the upcoming WRC and any additional international negotiations, commences and completes the necessary licensing proceeding for 2 GHz MSS applicants, and waits while the licensees construct and launch their satellite systems.

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<sup>25</sup>API at 4-5. See also Celsat at 11 ("the Commission already has allocated a generous amount of MSS spectrum" for use at 1.6 GHz).

Moreover, the international community is unlikely to view an early effective date for U.S. 2 GHz MSS in a favorable light. Resolution of the key issues must take precedence over any rush to implement a U.S.-only allocation for what will be a global service.<sup>26</sup>

Constellation recommends that the Commission defer taking further action until the final status of the bands involved (i.e., the 2010-2025 MHz uplink) is determined internationally.<sup>27</sup> GE Americom acknowledges that domestic MSS operators likely will not want to institute service until the "bands are open for a worldwide use in January 2005" and that, "[e]ven taking into account the lead time to construct a mobile satellite system, the Commission is not pressed for time" to finalize an allocation.<sup>28</sup> Indeed, the Commission should not forget that it evacuated spectrum for DBS at least seven years too soon.

The Commission must listen to these warnings. Both MSS and FS interests are admonishing the Commission to slow the reallocation process. Clearly, there is no consensus on the record regarding how much spectrum should be reallocated. Internationally, only 40 MHz is set aside for MSS, not the 70 MHz proposed by the Commission. Thus, rather than adopting the proposals in the NPRM, there is ample reason for the Commission to work with industry in developing an agreement regarding the amount and location of the spectrum

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<sup>26</sup>TRW at 12-13 (footnote omitted).

<sup>27</sup>Constellation at 2. COMSAT is concerned that the Commission's proposal is inconsistent with international allocations and that this inconsistency could delay even further any new worldwide MSS allocations. COMSAT at 7-8.

<sup>28</sup>GE Americom at 3.

to be reallocated for MSS before it even addresses the need to relocate FS and BAS users.<sup>29</sup>

**B. It is Uncertain if BAS Users Will Need 35 MHz to Maintain Operations.**

Having stopped short of documenting the need for reallocating 70 MHz to MSS in the 2 GHz band, it is premature for the Commission to consider relocating BAS (or FS) users. Moreover, even if the 1990-2025 MHz band were to be reallocated to MSS, the Commission still has not proven that relocating BAS users to the 2110-2145 MHz band is needed. If this BAS user relocation to the 2110-2145 MHz band is not justified, the premise underlying the need to relocate FS users is largely eliminated.

The Commission assumes that MSS and BAS users would not be able to share the 1990-2025 MHz band.<sup>30</sup> Instead of losing this 35 MHz, BAS users, which provide electronic news gathering and other services, merely would be relocated to the 2110-2145 MHz band.<sup>31</sup>

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<sup>29</sup>The U.S. delegation to WRC-95 should take the same approach. Inexplicably, however, the Commission appears determined to proceed with this reallocation despite these serious questions. In the recently adopted WRC-95 Report, the Commission continues advocating that WRC-95 adopt a worldwide primary MSS allocation in the 1990-2025 MHz and 2165-2200 MHz bands. WRC-95 Report at para. 43. It also recommends that the January 1, 1996, entry date for U.S. MSS systems be maintained. Id. at para. 45. Based upon the record of this proceeding, the foregoing Commission recommendations for WRC-95 are totally unjustified and should be withdrawn or deferred.

<sup>30</sup>NPRM at para. 9.

<sup>31</sup>NPRM at para. 9.

This proposed move has serious consequences for FS users. If BAS users are moved to the 2110-2145 MHz band, FS users would be moved off this band to the bands above 3 GHz.<sup>32</sup>

Prior to making any decision that would force FS users out of the 2110-2145 MHz band, the Commission must initiate further industry study to justify this move. Emerging digital technologies, and the possible availability of other bands for BAS users employing such technologies, must be evaluated.<sup>33</sup>

Loral is just one of the parties advocating this analysis:

First, the NPRM provides no information concerning an analysis of the need for existing users in the 1990-2025 MHz band for equivalent spectrum of 35 MHz bandwidth. As the Commission points out (NPRM, ¶ 13), even after reallocation of 1990-2025 MHz, there would remain 85 MHz of the spectrum allocation for mobile TV pickup stations at 2025-2110 MHz. If existing licensees in the 1990-2025 MHz segment are not making full use of the 35 MHz, then there is no reason to provide replacement bandwidth of 35 MHz. A more appropriate transition plan may be to require BAS incumbents to vacate the 1990-2025 MHz band and move into the 2025-2110 MHz band. This internal relocation plan should be explored as an alternative to the complicated migration plan proposed in the NPRM for mobile TV pickup stations.

\* \* \* \* \*

Second, as the Commission is well aware, future spectrum needs must be evaluated in light of the efficiencies to be gained by digital operations. Over the next decade, substantial changes will occur in the telecommunications technology as a result of development of digital technology. Reallocating 35 MHz of spectrum to replace an existing 35 MHz allocation makes no sense in a digital world. In fact, it would be a poor policy precedent for the Commission simply to concede without detailed study in an allocation proceeding that bandwidth allocated for analog operations must be replaced by an equivalent amount of spectrum for digital operations, kHz by kHz. If

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<sup>32</sup>NPRM at para. 10.

<sup>33</sup>The Commission acknowledges that this evaluation is appropriate. NPRM at para. 13.

the Commission adopts such a policy here, it will lay the groundwork for challenges to all future proceedings in which the Commission attempts to require licensees to use allocated spectrum more efficiently based on the availability of digital technology.

\* \* \* \* \*

In raising this issue, [Loral] does not contend that digital technology is currently available which would permit elimination of the 1990-2025 MHz segment as an allocation for BAS. Rather, [Loral] notes that these alternatives were not sufficiently explored in the NPRM. Recognizing the complexity of the issues, [Loral] recommends that the Commission refer the relocation issue to [a Federal Advisory Committee] which would consider, as one of many issues, the spectrum needs of existing users in the 1990-2025 MHz band by the date of entry for MSS.<sup>34</sup>

Loral is not alone. Motorola supports review of an alternative that would relocate BAS users to a higher band:

Another alternative is to move BAS operations over time to a higher band where more spectrally-efficient digital compression technologies could be employed. This latter alternative has the added advantage of opening up a substantial amount of additional spectrum in the 2 GHz band for services other than MSS, such as multimedia wireless services to support operations in public safety and critical industries. This alternative would also promote sound spectrum management policies by aggregating mobile services through the 1850-2200 MHz bands for both terrestrial and satellite applications, and by moving primary fixed and temporary fixed BAS operations to higher bands.

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Moreover, any clearing of bands should minimize costs to MSS licensees, promote good spectrum management practices and still provide a home for all needed BAS operations.<sup>35</sup>

TRW urges

the Commission to take the more prudent approach of allowing sufficient time for the BAS to adopt new technologies that may reduce or entirely eliminate

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<sup>34</sup>Loral at 14-16 (footnotes omitted).

<sup>35</sup>Motorola at 19 (footnotes and citations omitted).

the cost of relocating that service before permitting MSS licensees to operate in the 2 GHz bands.<sup>36</sup>

Celsat also wants the Commission to encourage BAS users to explore more efficient technologies before they could retain all 35 MHz.<sup>37</sup>

Given the substantial impact on FS and BAS users, too much is at stake for the Commission to reallocate the 2 GHz bands before all options are thoroughly evaluated. The Commission must follow the recommendations made by the MSS interests and require further study to determine if, in fact, the only alternative for BAS users is to move them from the 1990-2025 MHz band to the 2110-2145 MHz band. Based upon the record, it is highly unlikely that this would be the only reasonable available option.

**C. It is Uncertain if Relocating FS Users is Possible.**

The Commission's proposed relocation of 2 GHz FS users from the 2110-2145 MHz and 2165-2200 MHz bands to bands above 3 GHz is fundamentally flawed. The Commission cannot, in the public interest, move these 2 GHz users before it verifies: (i) the need for 70 MHz to accommodate MSS users; (ii) the need for 35 MHz to accommodate BAS users; and (iii) the availability of adequate replacement spectrum for FS users. Until these questions are answered, any relocation of 2 GHz FS users in these bands must be deferred.<sup>38</sup>

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<sup>36</sup>TRW at 3.

<sup>37</sup>Celsat at 7-8. SBE claims that BAS users need all 35 MHz and that expectations for more efficient operations with digital technologies are premature. SBE at 1-5. MST makes the same claim. MST at 4. These claims, however, are not totally justified and require further study.

<sup>38</sup>Loral proposes that FS users and BAS users assume secondary status as of a date certain. Loral at 9. This proposal is unjustified because there is no proof that any reallocation, that would force such status on FS or BAS users, is necessary.

As demonstrated above, it is evident in the record that the Commission has not justified its underlying assumptions regarding the need to reallocate 70 MHz for MSS and the need to protect BAS users by retaining their 35 MHz upon relocation. Nor has the Commission even taken into consideration the scarcity of spectrum above 3 GHz for the 2 GHz FS users that would be displaced from the 2110-2145 and 2165-2200 MHz bands.<sup>39</sup>

If the 2 GHz FS users are required to move from the 2110-2145 MHz and 2165-2200 MHz bands, they will be forced to join thousands of other 2 GHz FS users, evicted in ET Docket No. 92-9 for PCS, which are re-settling in the bands above 3 GHz. This assault on FS users must stop. A burden must be imposed upon MSS users to seek solutions for these problems without causing massive disruption to users of FS and other beneficial radio services.

Essential telecommunication services are provided by FS users. Public health and safety users depend on reliable and available FS frequencies for delivery of their services to the public. Local exchange carriers, cellular telephone companies, utilities, railroads, petroleum companies, financial institutions, and federal, state and local governments use FS

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<sup>39</sup>It is well settled that the Commission has a "duty to consider representative alternatives to its chosen policy and to give a reasoned explanation for its rejection of such alternatives." City of Brookings Municipal Telephone Company v. F.C.C., 822 F.2d 1153, 1169 (D.C. Cir. 1987) (citing Farmers Union Central Exchange, Inc. v. FERC, 734 F.2d 1486, 1511 (D.C. Cir.), cert. denied, 469 U.S. 1034 (1984) (footnote omitted)). Failure by an agency, like the Commission, to consider all elements in promulgating rules, breaches its responsibility for exercising expertise in a reasoned manner. City of Brookings, 822 F.2d at 1169 n.46. Thus, it would be "arbitrary and capricious if the [Commission] . . . entirely failed to consider an important aspect" of a rulemaking. Motor Vehicle Mfrs. Ass'n v. State Farm Mutual Auto Ins. Co., 463 U.S. 29, 43-44, 103 S.Ct. 2856, 2866-67 (1983). Advocating reallocation of the 2 GHz band for MSS and migrating incumbent users to other bands, without full consideration of potential alternatives or of how these displaced users would operate, would be such an arbitrary and capricious failure to consider an important aspect of the reallocation issue.

to support their network operations. Emerging wireless telecommunications, especially PCS, will rely on FS users for spectrum to provide their services and will rely on FS facilities in other bands to support their operations. Provision of these critical services requires very high path reliability (e.g., 99.999% or higher).

API makes it abundantly clear why FS user interests must be protected, as this reallocation for 2 GHz MSS unfolds, because these users provide:

specific industrial, public safety, and commercial requirements of many companies and public agencies that constitute much of the infrastructure of this nation. These [FS users] are frequently the cornerstone of supervisory and operational programs designed to deliver essential products and services to the public. Accordingly, API urges the Commission to refrain from relocating these essential [FS users] until the Commission completes its other proceedings involving mobile communications services and then fully evaluates the need, if any, for additional mobile communications services.<sup>40</sup>

Unfortunately, as demand for these essential FS services increases, available spectrum does not. To accommodate PCS, FS users have been required to clear the 2 GHz band and to relocate in bands above 3 GHz.<sup>41</sup> However, the bands designated for the relocating 2 GHz FS users, primarily the 6 and 11 GHz bands, already are very congested.<sup>42</sup> These bands could become largely unusable if the Commission's recent recommendation, to reallocate the upper 6, 11 and 18 GHz bands so that FS users are co-primary with NGSO

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<sup>40</sup>API at 9-10.

<sup>41</sup>New Telecommunications Technologies, 8 FCC Rcd at 6519-20.

<sup>42</sup>Displaced 2 GHz FS users generally operate paths 15-20 miles long. Creating New Technology Bands for Emerging Telecommunications Technology, Office of Engineering and Technology, OET/TS 91-1 (December 1991). Unfortunately, due to propagation characteristics, FS users cannot operate paths this long in bands above 15 GHz without incurring extra expense because additional repeaters would have to be installed. Thus, these users likely will migrate to the 6 GHz and 11 GHz bands.

MSS feeder links, is adopted at WRC-95.<sup>43</sup> In this decision, the Commission attempts to mollify FS users by ensuring that their relocation off the 2 GHz band for PCS is "not disrupted."<sup>44</sup> This "protection" would involve giving such users priority in the 6 and 11 GHz bands for a reasonable period of time and developing appropriate technical standards.<sup>45</sup> Given the catastrophic impact that NGSO MSS feeder links would have on FS users in the 6 and 11 GHz bands, this approach is totally inadequate.<sup>46</sup>

Needed relief from this spectrum congestion is not provided in other recent Commission allocation decisions. Newly available spectrum in the 4 GHz band from the federal government will not be allocated so that this band is feasible as a substitute for the

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<sup>43</sup>See WRC-95 Report at paras. 46-54.

<sup>44</sup>WRC-95 Report at para. 53.

<sup>45</sup>WRC-95 Report at paras. 53-54.

<sup>46</sup>Allocation of the upper 6 GHz and 11 GHz bands to NGSO MSS feeder links on a co-primary basis would be disastrous for FS users. The upper 6 GHz band is the preferred band for low capacity FS users, but these systems have very low receiver thresholds, which are particularly susceptible to satellite interference. Moreover, the NGSO MSS feeder link earth stations will be difficult to frequency coordinate. The ITU calculated a maximum coordination distance of 700 kilometers (435 miles) for downlinks in the 6 GHz band. Coordination generally will have to be done for the whole frequency band, over a much wider range of azimuth angles than a geostationary earth station. It will be important to site the earth stations in remote areas, with adequate terrain or manmade shielding. As NGSO MSS grows, it is likely that additional earth stations will be required in the future. For the foregoing reasons, interference from NGSO satellite downlinks is a potentially serious problem in the upper 6 GHz band, particularly interference into existing field equipment. The 50 MHz of spectrum affected may become unusable in the future, impacting frequency availability for up to 30% of the band. Similar problems exist in the 11 GHz band, since a wide range of azimuth angles must be considered. See May 16, 1995, Statement of Non-Concurrence by various FS interests, including TIA and ANS, to the Final Report of the Commission's Industry Advisory Committee on Preparation for WRC-95.

FS users being migrated off the 2 GHz band.<sup>47</sup> A currently pending proposal to re-channelize the 27.5-29.5 GHz band for the co-primary FS users is unlikely to be adopted.<sup>48</sup> The 38 GHz band, which is allocated for FS, already is saturated with PCS applicants needing backhaul support. Proposals are pending to reallocate the 37 GHz band and the bands above 40 GHz for FS,<sup>49</sup> but there is great uncertainty whether such allocations ever will be made.

**D. It is Uncertain if Sharing the 2165-2200 MHz Band Between FS and MSS Users is Impossible.**

Under the Commission's proposal to reallocate 70 MHz for MSS in the 2 GHz band, it would relocate BAS users off the 1990-2110 MHz band because it assumes that they would not be able to share with MSS users.<sup>50</sup> This assumption is not disputed.<sup>51</sup>

The same may not be true for the 2165-2200 MHz band. In the NPRM, the Commission assumes that FS users would have to move from this band because they could

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<sup>47</sup>See Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, First Report and Order and Second Notice of Proposed Rule Making, 77 Rad. Reg. (P&F) 2d 314 (1995).

<sup>48</sup>See Joint Petition for Rulemaking, filed February 9, 1995, by Harris Corporation-Farion Division and Digital Microwave Corporation to re-channelize the 28 GHz band for FS users.

<sup>49</sup>Amendments of Parts 21 and 94 of the Commission's Rules to Establish a Channel Plan and Technical Rules for the 37.0-38.6 GHz Band, RM-8553, filed September 9, 1994, by TIA; Amendment of Parts 2 and 15 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, Notice of Proposed Rule Making, 9 FCC Rcd 7078.

<sup>50</sup>NPRM at paras. 9-10.

<sup>51</sup>See, e.g., COMSAT at 9 (incompatibility is due to the large difference in transmit power levels of the two services); Motorola at 15; PCSAT at 6.